

FLIGHT

First Aero Weekly in the World.

Founder and Editor : STANLEY SPOONER.

A Journal devoted to the Interests, Practice and Progress of Aerial Locomotion and Transport.

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TO OUR READERS.

The Supply of "FLIGHT." Important Notice.

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As the demand for "FLIGHT" is so great each week, it is of the utmost importance that readers should place their orders *firmly* for copies of "FLIGHT" at the bookstalls, their newsagents, or direct from the publishers, at 44, St. Martin's Lane, W.C., if they wish to secure a copy every week and avoid disappointment. The stringent Government restrictions in regard to the supply of printing paper necessitates this precaution in order that only actual numbers required are printed, and all wastage by unsold copies may thereby be reduced to a minimum, if not eliminated.

THE PUBLISHERS.

EDITORIAL COMMENT.



THE Air Board stands confessedly a failure. It was bound to be in the very nature of its constitution. Devoid of any vestige of power to enforce its views on either the Admiralty or the Army Council, and with no clear idea of its own *raison d'être*, it would have required a miracle to make it a success—and the age of miracles is past.

We have heard a great deal recently about the impossibility of the Admiralty attitude towards the

Board, and it is on the shoulders of the Board.

The Admiralty that the major portion of the blame for the Board's failure is

placed by the critics who stand outside and comment from a standpoint which necessarily is one of insufficient premises. Vaguely we hear rumours that the Admiralty blocks the way to progress, but we are not told exactly what shape the opposition takes. Opposition there may be, but the crux of the matter is that the whole constitution of the Air Board as ultimately framed, without any executive power whatever, was wrong from the start. It has been tried and found wanting. It was conceived as a stop-gap, and, like all stop-gaps, it was foredoomed to failure. Not but what it has done a certain amount of good work in a few directions, but it most certainly is not the body with its mere advisory powers that was required to infuse something like cohesion into our Air Services.

Criticism of this kind is easy enough, we know. What is required at this juncture is something constructive. What is it, then, that is required to replace the Air Board? It has been strongly urged that what we require is an Air Service, separate and distinct altogether from the Navy and Army, having its own board of control and responsible only to Parliament. That is to say, there should be created out of the R.N.A.S. and the R.F.C. a new Service, using the word as we now understand the Navy and Army. As a result of the Air Board experiment, let us confess that we regard this as impossible now. Whatever may be the case in the years to come, with the war in full blast, it would require considerable

optimism just now to justify such a course. Within a decade, or perhaps two, supremacy in the air will mean all that is implied in the command of the sea now. But that day is hardly yet, and we have to regard the situation as it exists to-day, and as it will continue to exist for at least the period of this war.

Let us examine for a moment the true relation of aircraft to naval and military operations. The aeroplane and the airship have two main functions—those of long-range artillery, and long-range reconnaissance. These functions are so integrally a part of the larger tactics of war, that they cannot be separated from the main issues any more than can, let us say, the functions of the artillery arm. It would be possible to elaborate this point to a much greater extent were it necessary, but the argument will serve as it stands.

Now, if we concede this simple proposition, the case for a separate Air Service falls to the ground for the time being. But admittedly the present position is impossible. Jealousy and competition between the two Services are doing much to hamper efficiency and to bring the administration of the flying services into disrepute, while there really appears to be serious danger of the main issues of the war being lost to sight while the War Office and the Admiralty are fighting among themselves.

On Tuesday afternoon Mr. Balfour met the Air Board to discuss the situation, and in particular to talk over the future of the R.N.A.S. Apparently the meeting got us no farther in the direction of a clearing of the present unsatisfactory position of things. We did not think it would. What is required is not the discussion of academic attempts to reconcile conflicting interests, but the immediate application of a drastic remedy which will relegate existing competition and overlapping to the place they belong. That remedy we believe to be the formation of a central air authority—whether it be the Air Board reconstituted or otherwise—not to interfere initially with the tactical dispositions of either of the two Air Services, but with absolute power in all matters save this and internal administration. It should have—as most people thought the Air Board would have—complete control over all contracts for machines and supplies, thus putting an end to the present ruinous competition between the two services. In or after consultation with the Admiralty and the Army Council it should deal with strategical dispositions in so far as the definition of what may best be described as the respective spheres of activity of the two services are concerned. We should like to be more precise on this point, knowing what we do of the impossible situations which have arisen as a consequence of the overlapping of duties, but for obvious reasons we must refrain. Such powers vested in the present Air Board, which is admirable in its composition, would end the present most unsatisfactory state of things, which is the fault of the system more than of individuals. Whatever is to be done must be done at once. It is worse than deplorable that after 27 months of war we should have to discuss ways and means of stifling inter-departmental jealousies, and it cannot be too strongly insisted that now the way out has been indicated the remedy must be applied without an instant's delay.

Reprisals, the only way.

A month ago, when dealing with the subject of air-raids on this country, we said that very reluctantly we had come to the conclusion that the only effective means of bringing these to an end lay in reprisals in kind. In this connection it is interesting to note the tone of the American Press, reflected by correspondents who are intimate with the Germany of to-day. They appear to be all agreed that there is only one thing that is likely to appeal to the German people, and that is strong doses of their own medicine of "frightfulness." The *New York World*, for example, prints a communication from one of its correspondents—an acknowledged pro-German too—in which he says that our failure to adopt any sort of reprisals for Zeppelin raids or the inhuman treatment of prisoners is wholly misunderstood by the Teutonic mind. The Germans believe that our failure to reply in kind to air-raids is because we have not the means. The correspondent adds that the German popular mind thirsts to kill British non-combatants and women and children. We quite believe both statements. So far as concerns the latter, we can afford to smile at the readiness of the Hun population to gloat over the killing of civilians and of women and children. The mere readiness to gloat is amusing, but it ceases to be so when the killing is an accomplished fact, even though it be on a small scale and not wholesale as was witnessed in Belgium and Poland. It is only less unpleasant to contemplate the killing of enemy civilians, but if through it lies the only means of protecting our own shores and the lives of our own people, then sentiment must go by the board and we must pay the enemy in his own coin—raid for raid—until the German populace have learnt that to hanker for the blood of their enemies is not in accord with the very best teachings of up-to-date *Kultur*.

Apparently we are at last determined to carry the war into the enemy's country. According to the French *communiqués*, a number of British aeroplanes carried out a successful raid on the blast furnaces at Hagondange, which is near Thionville and Metz. The primary purpose of the raid was a military one—to destroy enemy munition works—but it appears to have a significance all its own. This part of the Allied front is far removed from the British sphere of operations, and all raids of the past have been carried out by French aircraft. The fact that British machines, and British machines alone, were allotted the task is a reply of the right sort to the German idea that we do not strike because we have not the means at our disposal. It is very much to be hoped that this new departure is the forerunner of many more such enterprises, for we know from the experience of the French that the Hun is very susceptible indeed to equality of treatment in the matter of frightfulness.

In the treatment of prisoners, France has replied by meting out to captured Germans exactly the same measure as her own men in the hands of the enemy have received. As a direct consequence, French prisoners in Germany have been accorded better treatment. We, on the other hand, know the appalling conditions under which our unfortunate people are compelled to exist in German prison

camps, and yet we continue to treat Hun prisoners almost as honoured guests. They live in comfort and are fed on the fat of the land, our reward for this being that we are regarded as fools and weaklings. The fact of the matter is that the Hun is like any other savage—the only appeal to his sensibilities is through his hide. He understands no argument save that of brute force and brutality. There is only one way to deal with the type. Measure for measure must be the policy, distasteful though it may be to our ideals of civilisation. You cannot cow a mad dog by reading a tract to him, but that is what our political know-alls seem to think is the best way of dealing with the case of the mad dog of Europe.

Posthumous Honours. In the House of Commons last week Mr. Redmond asked the Secretary for War whether, in view of the injustice to the memory of officers and men who died after the performance of deeds of great valour in the field, by reason of the regulation which prevents the conferring of any posthumous honour or decoration except the Victoria Cross, steps would be taken to alter the regulation so as to enable the D.S.O. and Military Cross to be conferred in cases of death.

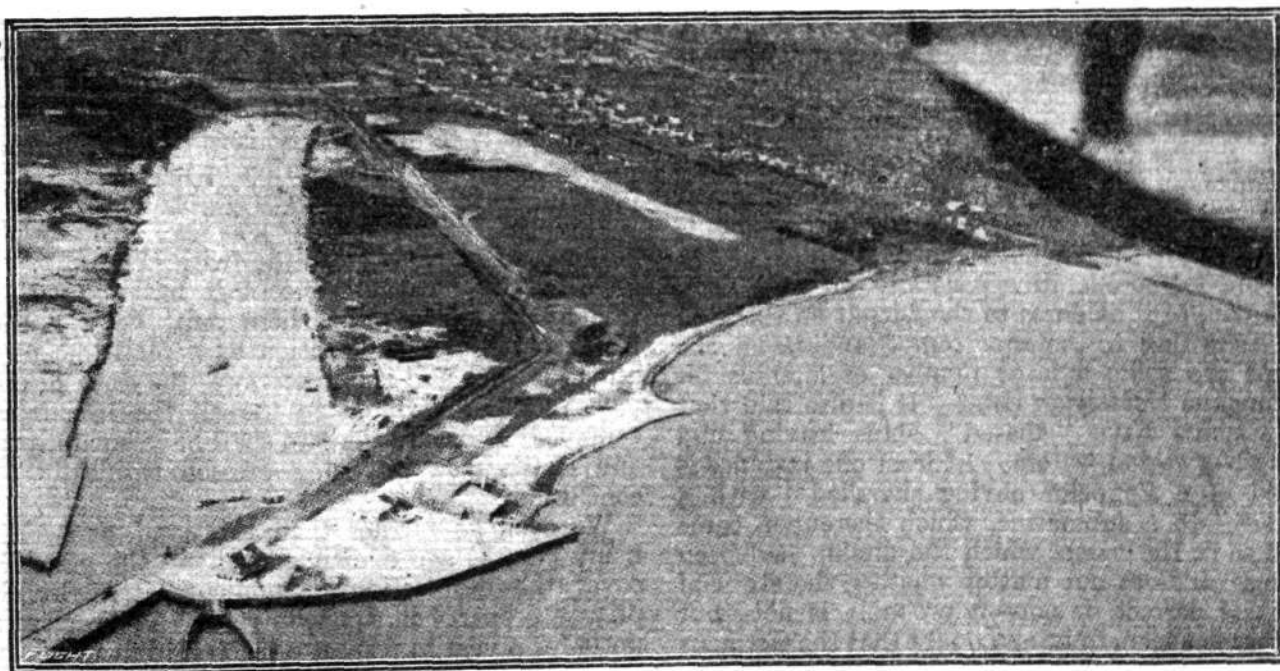
Mr. H. W. Forster replied to the effect that the subject was a very difficult one, but he assured his questioner that very sympathetic consideration would be given to it. And so for the moment the matter stands thus! Where in the name of everything is the difficulty, except in the eye of the official expert in red-tape? To the ordinary mind the matter is simply one of altering a regulation which stands convicted of injustice to many of our gallant dead. If the Victoria Cross is sometimes awarded posthumously, why then cannot the lesser military orders be so awarded without, as the Under-Secretary for War appears to fear, causing the heavens to

fall? To our way of thinking, the reform is one that should be made without delay. A gallant deed is no less brave when its doer loses his life in its accomplishment than if he survive. And the stereotyped intimation in so many cases that: "Had he lived, he would certainly have been recommended for the D.S.O.," does not carry the balm to the stricken ones left behind that the grant of the honour itself would do.

An Army Order has just been issued which lays it down that orders and decorations awarded to soldiers "who have not survived to receive them since August 4th, 1914," may be publicly presented to the next-of-kin. This is not at all the same thing as a concession of the awarding of posthumous honours, a concession which, in spite of the "difficulties" surrounding it, we trust to see made at an early date.

The Channel Raid.

For some considerable time past the Admiralty has shown a deplorable want of frankness in its *communiqués* relating to the sea affair. Even though there may be no official announcements, neither the Admiralty nor any other authority can altogether suppress the circulation of reports of things doing around the coast, and the very natural consequence of this want of candour is that rumour and report far more harmful to the national nerves and interests become rife. The latest example of this policy of hyper-secretiveness is in the official *communiqués* dealing with last week's raid of enemy destroyers in the Channel. If the Admiralty thinks that the enemy might benefit by the telling of the whole story, then so be it—we have no desire for mere news at the expense of giving valuable information to Germany. But there is of a certainty something more due in the way of a statement than the very fragmentary and unsatisfactory one that has been



The Atlantic Coast Aeronautical Station at Newport News, as seen from one of the Curtiss School flying boats.

issued. For one thing, we should like to know that adequate measures have been taken to avoid a repetition of the incident, and particularly that steps have been taken to render it more difficult for German reconnoitring aircraft to come over the Kentish coast and gain information about our patrol arrangements and the naval force available for the protection of the cross-Channel routes. There has been observable lately a marked activity in the enemy's air services, or in that branch which is entrusted with the duties of what we may call overseas patrol and reconnaissance. Our own coasts are very frequently visited by enemy planes, and so far as we can judge from the material available in the official reports of these visitations, the reconnoitring craft usually get safely away. We appreciate perfectly well the difficulties there are in dealing with such visitors, and, therefore, we know the futility of expecting that every German machine that appears over our coast should be destroyed. But it is not asking too much that we should receive the assurance that everything humanly possible is being done to reduce the number of our unwelcome visitors. We do not want to appear to criticise unduly, but it does seem beyond all reasonable doubt that the enemy was in possession of fairly exact information as to the distribution of the local naval forces, which enabled him to carry out his raid with a fair measure of success. For we must concede him that much. The Admiralty report has it that the raiding destroyers were "driven off," which argues that we were compelled to fight a defensive action. Is the Admiralty satisfied that that information was not obtained through aerial reconnaissance, at least in great part? And if the enemy got his information in this way, why did our own reconnaissance not give the German show away? Assuming that the German destroyer flotilla started from Zeebrugge—which appears to be the accepted idea—it would seem almost impossible for 10 modern destroyers to be concealed in that port from the observation of our own aerial reconnaissance. Of course, the affair may have some very full and adequate explanation, but, on the face of it, it appears that something was wrong.

Sea Patrol by Zeppelins.

There is another phase to the activity of the enemy in the air which is becoming increasingly manifest. This is in the employment of airships in sea patrol and for co-operating generally with the fleet, or such part of it as dares to show itself on the high seas. According to reports from Scandinavia, the Germans are using a large number of airships for patrolling the Norwegian coast. It is also said that these airships have "chased" ships leaving and entering Norwegian waters. At least one instance is recorded of a Zeppelin having signalled "with a large flag" to a submarine, which thereupon came up and sank the vessel which the airship had been pursuing. It does not matter whether the story of the flag is correct or not—it probably is not—but there does not seem to be any doubt that the Germans are making full use of their airships for what we conceive to be the real rôle in war of this type of aircraft.

The war has demonstrated that "invasion by airship" is a myth. It has further demonstrated that the airship, vulnerable as it is to attack by aeroplane and guns, is useless for reconnaissance over enemy positions, especially by day when reconnaissance must be carried out. But as the eyes of a fleet, as we have so persistently urged, it unquestionably has a very high value, which has from long before the war been realised by the German High Command.

If only our own naval and military authorities had listened to the voice of warning—!

After the War.

It is undoubted that Germany's policy now is to so reduce the mercantile fleets of the world by a ruthless submarine and airship war, building herself at the same time, that at the end of the war she may find herself the principal maritime carrying Power. There is the one way which we have advocated in the past—and one way only—to counter this policy. Let it be stated with all the weight of authority possible that, given that the war ends as victoriously as we intend it shall end, a part of the terms of peace will be the handing over of ton for ton in the various classes of ships in replacement of vessels destroyed by German warships. By classes we mean, for example, the *Vaterland* for the *Lusitania*. There must be no replacing a thousand tons at £8 per ton for a thousand at £80. We know that the mere suggestion that this may be a part of the programme has frightened the German shipowning interest, and if that is so how much more effective would be the categorical announcement that we intend to exact full reparation for at any rate our own and our Allies' marine losses. Those who are too proud to fight in defence of civilisation's rights and interests must expect to look out for themselves.

Further, we must see to it that the very drastic suggestion now put forward should be carried through, that at least for a term of years no German ship, man-of-war or merchantman, is given the hospitality of a British or Colonial port. Our coaling and oil-fuel stations must be absolutely closed to all German vessels for a term proportionate to the amount of wanton and illegal destruction of merchant tonnage perpetrated by the apostles of frightfulness.

Shipping *qua* shipping has, we acknowledge, nothing in particular to do with "FLIGHT," but as a vitally national concern it has a great deal to do with all of us. There must be a national policy to secure our position as a maritime nation after the war, and it is, therefore, the duty of every journal and individual to use all the influence at command to ensure that we shall have such a policy and insist upon its being pressed ruthlessly to a conclusion.

We even go farther than this, and, as we have many months ago demanded, extend the penalty to cover the destruction of non-combatant life and private property in Zeppelin raids. If we close our ports for a year in respect of each raid in which such losses occur, it will perpetuate the lesson that in the long run the methods of barbarism do not pay.

The British Air Service

"PER ARDUA AD ASTRA"

UNDER this heading are published each week the official announcements of appointments and promotions affecting the Royal Naval Air Service and the Royal Flying Corps (Military Wing) and Central Flying School. These notices are not duplicated. By way of instance, when an appointment to the Royal Naval Air Service is announced by the Admiralty it is published forthwith, but subsequently, when it appears in the LONDON GAZETTE, it is not repeated in this column.

Royal Naval Air Service.

Admiralty, October 24th.
Lieut.-Com. (Squadron Com.) H. A. Williamson appointed as Acting Com., to date Sept. 2nd.

The following have been granted temp. commissions as Sub-Lieuts., R.N.V.R., to date as stated: Chief Petty Officer W. J. Liberty, Oct. 16th; and F. H. Hudson, Oct. 16th.

Admiralty, October 25th.
Temp. Lieut.-Com., R.N.V.R., R. W. McGrath appointed as Temp. Acting Com., R.N.V.R., to date Oct. 23rd.

A.B., R.N.V.R., A. M. Humble-Crofts granted a temp. commission as Sub-Lieut., R.N.V.R., with seniority Oct. 21st.

The following have been entered as Proby. Flight Officers for temp. service, all to date Oct. 29th: D. A. Stamps, F. J. W. Mellersh, H. C. Arnold, C. R. Pegler, D. F. Warren, E. M. Porter, W. J. K. Gulland, J. S. de Wilde and H. B. Brearley.

Admiralty, October 26th.
A. W. Phillips and A. B. Mackintosh have been entered as Proby. Flight Officers (Temp.), and appointed to the "President," for R.N.A.S., to date Nov. 5th and Oct. 24th respectively.

Admiralty, October 27th.
A. B. Murray granted a temp. commission as Sub-Lieut., R.N.V.R., with seniority Oct. 25th.

N. S. Lott entered as Proby. Flight Officer, for temp. service, to date Oct. 29th.

Admiralty, October 28th.
The following have been entered as Proby. Flight-Sub-Lieuts. for temp. service, to date as stated: A. F. MacDonald, Sept. 5th; F. MacP. Bryans and C. E. S. Lusk, Sept. 26th.

Royal Flying Corps (Military Wing).

London Gazette, October 24th.
Squadron Commanders.—From Flight-Commanders, and to be Temp. Majors whilst so employed:—Oct. 1st: Lieut. (Temp. Capt.) G. L. P. Henderson, S.R.; Lieut. (Temp. Capt.) A. C. Wright, S.R.

Staff Officer, 2nd Class (graded for Pay as a Brigade Major).—Temp. Capt. F. R. Hedges, Gen. List, from an Adjutant; Oct. 7th.

Assistant Experimental Officer (graded as an Equipment Officer, 3rd Class).—Temp. Lieut. H. L. Billinton, Lan. Fus., and to be transfd. to Gen. List; Aug. 15th.

Equipment Officers, 3rd Class.—Temp. 2nd Lieut. G. S. Steel, Gen. List; Sept. 18th. Sept. 22nd: Temp. 2nd Lieut. L. Norris, Gen. List; Temp. 2nd Lieut. J. B. Waddoup, Gen. List. Oct. 5th: 2nd Lieut. (on prob.) R. Donald, S.R.; 2nd Lieut. (on prob.) S. S. Kaye, S.R.; 2nd Lieut. J. D. Campion, S.R.

Memoranda.—2nd Lieut. (on prob.) E. G. C. Quilter, from R.F.C., S.R., to be Temp. 2nd Lieut. on Gen. List for duty with R.F.C.; July 18th. The under-mentioned to be Temp. 2nd Lieuts., for duty with R.F.C.:—Sept. 9th: 2nd Air-Mech. E. H. Channon, from R.N.A.S.; 1st Air-Mech. R. G. C. Pinfield, from R.N.A.S.; 2nd Air-Mech. H. W. Ingram, from R.N.A.S. The under-mentioned to be Temp. 2nd Lieuts. (on prob.), for duty with R.F.C.: Coy.-Qr.-Mr.-Sergt. T. Allen, from Bord. R. (T.F.); Sept. 3rd. Qr.-Mr.-Sergt. J. W. Jennings; Sept. 10th. The under-mentioned Cadets to be Temp. 2nd Lieuts. (on prob.), for duty with R.F.C.:—Sept. 10th: C. E. Tebbs, C. H. Simpson, R. W. Atchley, H. Haddon, J. C. Courtice, R. L. Cobb, H. Stansfield, K. A. Smith, L. L. W. Smythe and F. Ward.

Supplementary to Regular Corps.—The under-mentioned resign their commissions:—Oct. 25th: 2nd Lieut. W. A. Spratt, 2nd Lieut. (on prob.) C. A. Mader. The under-mentioned to be 2nd Lieuts. (on prob.): R. Donald; Aug. 31st. L. M. Archibald; Oct. 6th. H. Wilson; Oct. 8th. F. H. Tyas; Oct. 9th.

London Gazette Supplement, October 25th.
Flight-Commanders.—From Flying Officers, and to be Temp. Capt. whilst so employed: Temp. 2nd Lieut. P. G.

Horswell, Gen. List; Oct. 10th. 2nd Lieut. P. A. Byrne, R.A.; Oct. 14th. Capt. H. J. F. Hunter, Rif. Brig., from a Flying Officer; Oct. 17th.

Flying Officers.—Temp. 2nd Lieut. A. R. M. Rickards, Gen. List; Oct. 4th. Oct. 6th: Temp. 2nd Lieut. E. G. S. Wagner, R. War. R.; Temp. 2nd Lieut. G. F. Haseler, R. W. Surr. R., and to be transfd. to Gen. List. Oct. 7th: 2nd Lieut. R. M. Foster, R. Fus., and to be secd.; 2nd Lieut. F. H. O'Beirne, S.R.; 2nd Lieut. G. B. Pratt, R.A., and to be secd. Oct. 8th: 2nd Lieut. (on prob.) H. W. Norman, S.R.; Temp. 2nd Lieut. C. M. White, Gen. List. 2nd Lieut. D. Ransom, 12th Australian Inf. Bn.; Oct. 10th.

Equipment Officer, 2nd Class.—Lieut. E. S. Bramham, S.R., from an Asst. Equipment Officer; Oct. 11th.

Equipment Officers, 3rd Class.—2nd Lieut. W. R. G. Atkins, S.R.; June 19th. Temp. 2nd Lieut. F. H. Hawksford, Gen. List; Sept. 20th. Temp. 2nd Lieut. J. A. Payne, Gen. List; Sept. 25th. 2nd Lieut. A. N. Greg. R. War. R. (T.F.), from a Flying Officer (Ob.); Oct. 9th.

Memorandum.—Lieut. W. Hardcastle, from a Cadet Bn., R. War. R., to be Temp. 2nd Lieut. (on prob.), for duty with R.F.C.; Aug. 24th.

Supplementary to Regular Corps.—The under-mentioned 2nd Lieuts. to be Lieuts.:—Oct. 1st: L. F. Hursthouse, (Temp. Capt.) H. B. T. Childs, (Temp. Capt.) G. S. Sansom, (Temp. Capt.) A. C. Gilling, C. St. Noble, B. V. Grealy, R. P. J. McCoy, V. F. P. Bryce, S. Ransom, G. L. Godden, W. F. Anderson, from Lieut., Gen. List, Canada, to be Lieut.; Oct. 1st. 2nd Lieut. (on prob.) C. H. White resigns his commission; Oct. 26th.

London Gazette Supplement, October 27th.
Adjutants.—Temp. 2nd Lieut. S. O. Barnsdale, Gen. List, from a Flying Officer, and to be Temp. Lieut. whilst so employed, vice Temp. Capt. G. C. Anne, Yorks. L.I. (T.F.); Oct. 8th. Major M. Freeman, Worc. R., S.R.; Oct. 12th.

Equipment Officer, 3rd Class.—2nd Lieut. (on prob.) (now Temp. Hon. Lieut.) E. A. Salt, S.R., from July 1st to Aug. 31st. Acting Sergt.-Major H. C. S. Bullock to be 2nd Lieut., for duty with R.F.C.; Oct. 10th. The under-mentioned to be Temp. 2nd Lieuts. (on prob.), for duty with R.F.C.:—Sept. 10th: Cadet S. F. Barton, Sergt. J. S. Berdoe, Cadet N. H. Knock.

Supplementary to Regular Corps.—The under-mentioned resign their commissions:—Oct. 27th: 2nd Lieut. R. L. Burdon-Saunders, 2nd Lieut. (on prob.) T. A. J. Guyatt, 2nd Lieut. (on prob.) L. W. Wood. The under-mentioned to be 2nd Lieuts. (on prob.): W. W. Hall; Aug. 22nd. M. J. James; Sept. 6th. R. R. Prentice; Oct. 9th. R. Clelland; Oct. 16th.

London Gazette, October 28th.
Staff Captains.—Lieut. A. J. Child, Lond. R. (T.F.), from Adj., R.F.C., and to be Temp. Capt. whilst so employed, vice 2nd Lieut. T. M. McKenna, 8th Hrs., S.R.; Aug. 23rd.

Flying Officers (Observers).—Temp. Lieut. C. H. Brewer, Bedf. R.; Sept. 1st. Temp. Lieut. E. W. Greswell, Ches. R., and to be transfd. to Gen. List; Sept. 25th. 2nd Lieut. G. L. Owen, E. Lan. Brig., R.F.A. (T.F.); Sept. 26th. Oct. 3rd: 2nd Lieut. G. R. Bolitho, Devon R., S.R., and to be secd.; Temp. 2nd Lieut. (on prob.) W. H. Buckeridge, Gen. List. Lieut. E. T. Owles, R. Ir. Fus., S.R., and to be secd.; Oct. 4th. Lieut. (Temp. Capt.) J. L. Head, Lond. R. (T.F.); Oct. 5th. Oct. 8th: Temp. Lieut. W. R. G. Pearson, A.S.C., and to be transfd. to Gen. List; Lieut. S. P. Gamon, Ches. R. (T.F.); 2nd Lieut. (Temp. Lieut.) W. R. Haggas, N. Lan. R. (T.F.); Temp. 2nd Lieut. C. C. Miller, W. Rid. R.; Temp. 2nd Lieut. R. W. Follit, R.A., and to be transfd. to Gen. List; 2nd Lieut. R. A. Wingfield, R. Ir. Fus., and to be secd.

Equipment Officer, 2nd Class.—2nd Lieut. C. G. Coe, S.R., from an Asst. Equipment Officer, and to be Temp. Lieut. whilst so employed; Sept. 30th.

Adjutants.—Lieut. F. S. Isaac, Worc. R., S.R., and to be sec'd., vice Lieut. (Temp. Capt.) A. J. Child, Lond. R. (T.F.); Sept. 21st. Lieut. H. French, W. York. R., S.R., from a Flying Officer (Ob.); Sept. 27th.

Memorandum.—The notification in the *Gazette* of Aug. 24th, 1916, regarding Temp. Hon. Capt. G. B. Cockburn is cancelled.

Supplementary to Regular Corps.—2nd Lieut. (on prob.) H. W. Norman is confirmed in his rank. The appointment of 2nd Lieut. (on prob.) E. A. Salt, notified in the *Gazette* of July 17th, 1916, is antedated to June 14th, 1916.

London Gazette Supplement, October 28th.

Flying Officers (Observers).—Oct. 10th: Temp. 2nd Lieut. R. J. G. Temple, R.A., and to be transfd. to Gen. List; Temp. 2nd Lieut. (on prob.) A. J. Cathie, Gen. List.

Supplementary to Regular Corps.—2nd Lieut. H. H. Burt resigns his commission; Oct. 29th. The under-mentioned 2nd Lieuts (on prob.) are confirmed in their rank: C. Crawford, A. D. Robertson, A. E. Biggs, W. P. Bingham.

London Gazette Supplement, October 30th.

The under-mentioned to be 2nd Lieuts., for duty with R.F.C.: Pte. C. P. Lowry, from Can. Army Med. Corps; Aug. 27th. Armr.-Staff-Sergt. J. Allan, from Can. Ord. Corps; Sept. 19th. Sept. 27th: Sergt. W. Steer, from Lond. R. (T.F.); Sergt. H. J. H. Dicksee, from Lond. R. (T.F.); Sergt. J. L. Denman, from Can. Forces; Corpl. H. Brooks, from Can. Inf.; Pte. L. N. Smith, from Can. Inf.; Pte. A. W. Waddy, from a Can. Divl. Supply Col. Corpl. G. H. Boorne, from a Can. Divl. Sig. Co.; Sept. 28th. Oct. 3rd: Corpl. J. K. Campbell, from a Can. Sig. Co.; Pte. H. Ritchie, from Can. A.S.C.; Oct. 6th: Mech. Sergt.-Major G. E. Bower, from A.S.C.; Flight-Sergt. S. Frost, from R.F.C.; Acting Sergt. W. A. L. Spencer, from A.S.C.; Acting Bdr. A. C. Heaven, from Machine Gun Corps; L.-Corpl. F. Young, from Cyclist Bn. (T.F.); L.-Corpl. E. R. Stewart, from Can. Sig. Serv.; Pte. O. G. Durham, from Can. Corps Cav. Regts. Oct. 9th: 1st Cl. Air-Mech. C. J. Geddes, from R.F.C.; 2nd Air-Mech. L. E. Yeomans, from R.F.C.; 2nd Air-Mech. W. Le Lorraine, from R.F.C.

Squadron Commander.—Capt. B. F. Moore, R. War. R., from a Flight-Com., and to be Temp. Major whilst so employed; Oct. 1st.

Flying Officers.—2nd Lieut. J. G. B. Baines, R. War. R., and to be sec'd.; Sept. 22nd. Oct. 4th: 2nd Lieut. C. G. H. Winter, S.R.; 2nd Lieut. E. B. Smyth, S.R.; 2nd Lieut. J. C. Young, S.R. Oct. 8th: Lieut. S. E. Goodwin, L'pool R. (T.F.); Temp. 2nd Lieut. K. A. Meek, W. York. R., and to be transfd. to Gen. List; 2nd Lieut. E. Jacot, S.R. Oct. 9th: 2nd Lieut. A. Winks, N. Mid. Div. Cyclist Cos., Divl. Mtd. Troops (T.F.); Temp. 2nd Lieut. (on prob.) R. D. Baker, Gen. List. Oct. 10th: Temp. Lieut. C. F. Eckel, Dorset R., and to be transfd. to Gen. List; 2nd Lieut. (Temp. Lieut.) C. Dunlop, 1st Lovat's Scouts Yeo. (T.F.); Temp. 2nd Lieut. T. B. Bruce, Gen. List; 2nd Lieut. C. Crawford, S.R. Oct. 11th: Temp. 2nd Lieut. R. B. Wainwright, attd. 17th Lrs.; 2nd Lieut. J. R. Statter, Som. L.I., S.R., and to be sec'd.; 2nd Lieut. J. E. H. Bibby, R.W. Fus., and to be sec'd.; Lieut. J. G. L. Brown, R.F.A., S.R.; Temp. Lieut. J. Glover, R.A., and to be transfd. to Gen. Lis'; Temp.

2nd Lieut. (on prob.) J. W. Somers, Gen. List; 2nd Lieut. (Temp. Lieut.) C. McC. H. M. Caffyn, E. Surr. R., and to be sec'd.; Capt. L. W. Hopkins, 21st Canadian Inf. Bn.; Temp. 2nd Lieut. D. M. Faure, Gen. List, from a Flying Officer (Ob.), with seniority from Apr. 23rd; 2nd Lieut. J. D. Cowie, Arg. and Suth'd. Highrs. (T.F.); Temp. 2nd Lieut. C. A. Sutcliffe, Gen. List. Oct. 12th: 2nd Lieut. A. Jennings, R.A., and to be sec'd.; 2nd Lieut. F. A. Swoffer, Middx. R. (T.F.). 2nd Lieut. S. Collier, Ches. R. (T.F.); Oct. 14th.

Equipment Officers, 3rd Class.—Temp. 2nd Lieut. (on prob.) W. Hardcastle, Gen. List; Sept. 18th. Oct. 4th: 2nd Lieut. M. Keegan, R. Dub. Fus.; Temp. 2nd Lieut. W. B. Everton, Gen. List; Temp. 2nd Lieut. A. S. Morris, Gen. List; Temp. 2nd Lieut. T. E. Drowley, Gen. List; Temp. 2nd Lieut. H. McKenna, Gen. List; 2nd Lieut. J. Kemper, S. Lan. R.

Asst. Experimental Officer (graded as an Equipment Officer), 3rd Class.—2nd Lieut. F. W. Musson, N. Lan. R. (T.F.); Sept. 12th.

Memoranda.—The under-mentioned 2nd Lieuts. to be Temp. Lieuts. whilst serving with R.F.C.:—Sept. 1st: E. Robinson, R.A.; H. M. T. Lehmann, Essex R.; S. A. Villiers, R.A.; E. L. Benbow, R.A.; R. L. Chidlaw-Roberts, Hamps. R.; A. H. Bottrell, R. War. R. The under-mentioned 2nd Lieuts., S.R., to be Temp. Lieuts. whilst serving with R.F.C.:—Sept. 1st: M. H. Turner, Dorset R.; J. B. E. Crosbie, Worc. R.; N. M. Hoskins, N. Staff. R.; C. de W. Taylor, 20th Hrs.; A. H. Francis, R. Suss. R.; (now Lieut.) A. R. Johnston, High. L.I.; N. Howarth, R. Lanc. R.; G. Aste, A.S.C.; H. S. MacNeil, R.F.A.; A. P. V. Daly, Conn. Rang. The under-mentioned Temp. 2nd Lieuts. to be Temp. Lieuts. whilst serving with R.F.C.:—Sept. 1st: C. H. Stocks, R. H. Sievwright, G. K. Palmer, E. C. Winkley, J. A. Simpson, S. H. Ellis, G. F. Westcott, G. A. Thompson, J. S. Anderson, A. L. Findlay, A. M. Walters, L. R. Heywood, F. E. Sedgwick, C. A. Brewster-Joske, H. T. Shaw, R. J. Sanceau, J. McArthur, K. F. Balmain, W. S. De Ropp, O. Hughes, L. J. Mann, H. A. Arbuthnot. The under-mentioned to be Temp. 2nd Lieuts. (on prob.) for duty with R.F.C.: Pte. J. C. Griffith, from N. Zealand Expeditionary Force; Sept. 11th. L.-Corpl. L. Legge; Oct. 11th. Flight-Sergt. P. A. Rich, from R.F.C., to be Temp. 2nd Lieut. (on prob.), for duty with the Military Wing of that Corps; Oct. 1st.

Supplementary to Regular Corps.—N. C. F. Francis, from 2nd Lieut. (Temp. Lieut.) London Brig., R.F.A. (T.F.), to be Lieut.; Oct. 4th. 2nd Lieut. D. Cox resigns his commission on account of ill-health; Oct. 31st. 2nd Lieut. (on prob.) R. Baltus resigns his commission; Oct. 31st. The under-mentioned 2nd Lieuts. (on prob.) are confirmed in their rank: E. Jacot, C. G. H. Winter, J. C. Young, E. B. Smyth, T. McC. Yarwood, A. C. Blackmore, F. H. Postlethwaite, S. S. Kaye. The under-mentioned to be 2nd Lieuts. (on prob.): W. H. R. Skudder; Sept. 4th. W. A. Haslam; Oct. 11th.

Schools of Instruction.

London Gazette Supplement, October 31st.

Assistant Commandants, Staff Officers, 2nd Class (graded for Pay as Brigade Majors).—Sept. 19th: Temp. Major A. E. G. MacCallum, Gen. List, from a Park Comdr.; Lieut. (Temp. Capt.) S. W. Smith, R.A., from a Flight-Comdr.



Air Work in the Soudan.

In the despatch published in the *London Gazette* of October 25th, describing operations against Ali Dinar, the Sultan of Darfur, in the early part of this year, General Sir Reginald Wingate, Sirdar and Governor-General of the Soudan, says that the conduct and efficiency of the men of the Royal Flying Corps placed at his disposal by the Commander-in-Chief in Egypt, fully upheld their splendid reputation.

In detailing the fighting for El Fasher, General Wingate says:—"At 6 a.m., when the troops were about to advance, some hundreds of the enemy to our left flank were dispersed by artillery and Maxim fire and bombed by aeroplane. At 10 a.m. Colonel Kelly, with the mounted troops, entered El Fasher, which was found to be almost deserted except by women.

"Sultan Ali Dinar, on receipt of the news of the crushing defeat at Beringia, made a final effort to rally the remainder of his army to the attack in the early morning of the 23rd, and subsequently fled with some 2,000 men, who were bombed

as they emerged from the south end of the town by Lieutenant J. C. Slessor, Royal Flying Corps, in the course of a gallant and successful flight."

It will be realised, points out General Wingate, that a most careful and comprehensive organisation was required to convey some 3,000 men, with stores, guns, aeroplanes and other bulky equipment of a modern expeditionary force, from the base at Khartoum (500 miles by rail from the nearest seaport) to railhead 428 miles away and thence across a desolate tract of roadless country for nearly 400 miles.

Among those commended by General Wingate for their services in connection with the military operations and the situation in the Soudan created by the war are:—

Royal Flying Corps.—Lieut. (Temp. Major) E. J. BANNA-TYNE, 19th Hussars; Major (Temp. Lieut.-Col.) P. R. C. GROVES, Shropshire L.I.; Lieut. J. C. SLESSOR, Spec. Res. 2197, Flight Sergt. F. BATTY; 3724, Sergt. H. A. HEMMING; 3682, 1st Class Air Mechanic T. HORTON; 4745, Pte. G. MADDAMS, A.S.C.

HONOURS.

Honours for the R.N.A.S.

IN the list of naval honours published in a supplement to the *London Gazette* on October 25th, appeared the following:—

The King has been graciously pleased to give orders for the appointment of the under-mentioned officers to be Companions of the Distinguished Service Order:—

Flight-Lieut. COLIN ROY MACKENZIE, R.N.A.S.

In recognition of his skill and gallantry in destroying a German kite balloon on September 7th, 1916, under very severe anti-aircraft fire.

Distinguished Service Cross.

The King has also been graciously pleased to approve of the award of the Distinguished Service Cross to the under-mentioned officers:—

Flight-Commander TOM HARRY ENGLAND, R.N.A.S.

In recognition of his services on August 26th, 1916, when, accompanied by a military officer as Observer, he flew a seaplane 43 miles inland from the Syrian Coast, crossed a range of hills 2,000 ft. high, with clouds at 1,500 ft., and after dropping bombs on the station of Homs, returned safely to his ship. The machine was exposed to rifle fire at extremely low altitudes for long periods, and Flight-Commander England showed remarkable pluck, determination and skill in carrying out the flight under adverse conditions.

Flight-Lieut. CHARLES TEVERILL FREEMAN, R.N.A.S.

In recognition of the gallantry and skill displayed by him on the night of August 2nd, 1916, when he made a determined attack on a Zeppelin at sea, only abandoning the attack when he had exhausted all his ammunition. As darkness was approaching at the time, and his chances of being picked up were problematical, his courage and devotion in returning to the attack a second and third time were exemplary.

Flight-Sub-Lieut. STANLEY JAMES GOBLE, R.N.A.S.

In recognition of his services on September 24th, 1916, when he attacked two hostile machines in the vicinity of Ghisteltes at close range, and brought one of them down on fire in a spiral nose-dive.



British Flyers in Roumania.

MESSAGES from Bucharest state that on October 27th four British machines, each with two pilots, reached the Roumanian capital from Imbros making the 312 mile journey in five hours. It is also stated that 128 French aeroplanes had arrived in Roumania.

The *Times* correspondent in Bucharest, writing on the previous day, stated that a British aeroplane, piloted by Lieut. Harvey, left the island of Tenedos yesterday morning

Flight-Sub-Lieut. RONALD GRAHAME, R.N.A.S.

For exceptional gallantry in attacking and beating off four enemy seaplanes whilst on escort duty off the Belgian coast on September 22nd, 1916.

Flight-Sub-Lieut. DANIEL MURRAY BOYNE GALBRAITH, R.N.A.S.

In recognition of his services in attacking a large enemy two-seater seaplane on September 28th, 1916. Flight-Sub-Lieut. Galbraith's machine was severely damaged by gunfire from the enemy machine, which finally blew up in the air.

Medals for the R.F.C.

A SPECIAL supplement to the *London Gazette*, issued on October 27th, announced that His Majesty the King had been graciously pleased to award the Military Medal for bravery in the field to the undermentioned non-commissioned officers and men. It is explained that, as the medals have been awarded for services rendered on various occasions during the progress of the campaign, the ranks now shown are not in all cases those held by the recipients when the acts of gallantry were performed:—

- 2202 Corpl. S. Attwater, R.F.C.
- 2916 Corpl. J. E. Beddows, R.F.C.
- 897 Flight Sergt. W. G. Borrett, R.F.C.
- 1863 Sergt. C. Brown, R.F.C.
- 1305 1st Air-Mech. J. S. Clark, R.F.C.
- 413 Flight Sergt. C. I. Collett, R.F.C.
- 2126 Sergt. A. R. Edwards, R.F.C.
- 4708 1st Air-Mech. E. C. Gill, R.F.C.
- 45311 2nd Air-Mech. J. J. Hollyhead, R.F.C.
- 25076 2nd Air-Mech. (acting Corpl.) P. H. Marshall, R.F.C.
- 1649 Corpl. W. N. Mayger, R.F.C.
- 2137 Sergt. H. Monks, R.F.C.
- 7330 2nd Air-Mech. T. Murray, R.F.C.
- 4882 2nd Air-Mech. H. S. Porter, R.F.C.
- 2594 Sergt. A. H. Read, R.F.C.
- 792 Flight Sergt. F. J. Smith, R.F.C.
- 2551 1st Air-Mech. F. Thomasson, R.F.C.
- 364 Flight Sergt. (Acting W.O.) G. Thornton, R.F.C.

and arrived here this afternoon, after passing over Thrace and the Bulgarian town of Adrianople. His unexpected appearance caused a scare here, and the alarm was given in the usual way. Five other aeroplanes left Tenedos at the same time, and four are reported to have arrived in other parts of Roumania. Lieut. Harvey, while flying low, was attacked by Bulgarian artillery, but escaped injury.

Incidentally there has been a cessation of aerial attacks on Bucharest for the past few weeks.



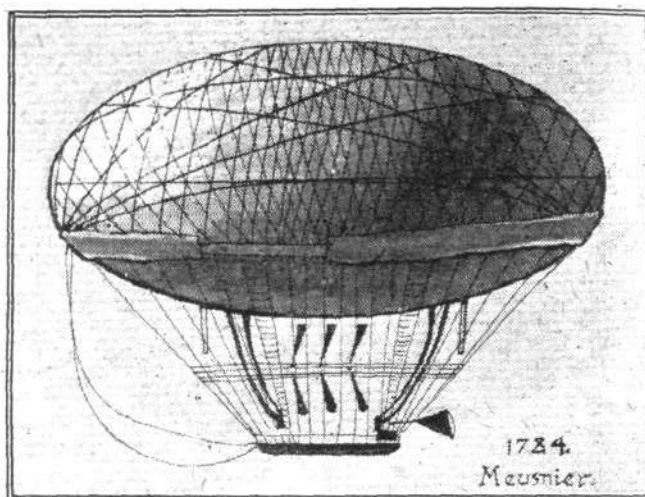
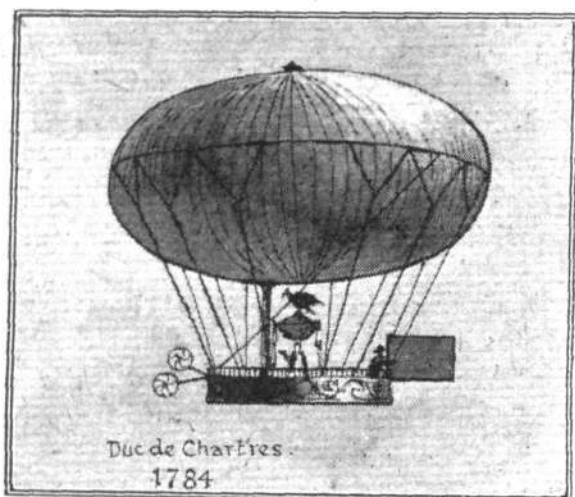
The finish of an awkward near cut home.—An incident at one of our aerodromes.



AIRSHIP PIONEERS

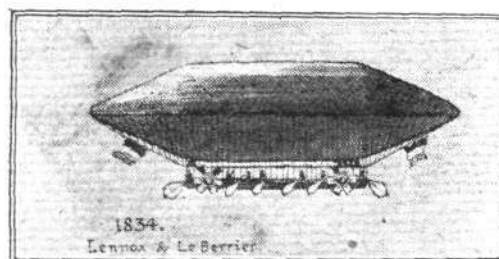
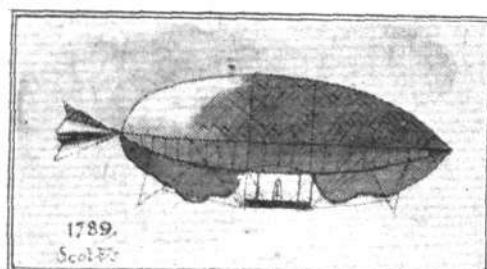
WITH the exception of those closely in touch with aeronautics, there are probably few people who know or realise the great number of attempts which have been made to produce a successful airship. By way of supplementing therefore the *résumé* of Zeppelin development and the details of "L. 33," one of the latest German productions, which appeared in

year after the début of the balloon, the first dirigible materialised on these lines. In 1784 the Brothers Robert, two clever mechanics of Paris, who built the first gas-inflated balloon to carry passengers, constructed this dirigible for the Duke de Chartres. The envelope was ellipsoidal in shape, measuring 52 ft. long and 32 ft. deep, and had a capacity of 30,000 cubic



our last issue, we have prepared an historical survey giving particulars and illustrations of airships which have been built and tried. We have purposely refrained from including any and every project for an airship which has been put forward at any time and have only included those which have actually materialised. Owing to the extensive nature of

ft. On the suggestion of General Meusnier, an outer envelope was provided to prevent loss of gas. Suspended below the envelope was a car from which the oars were operated. The first ascent was made on July 6th at St. Cloud with the Duke, the two Roberts and another on board. No provision had been made for the escape of gas as it expanded when ascending,

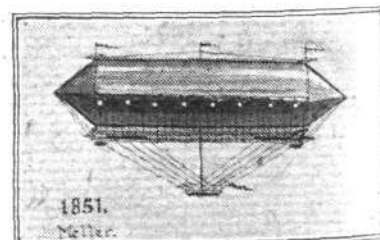
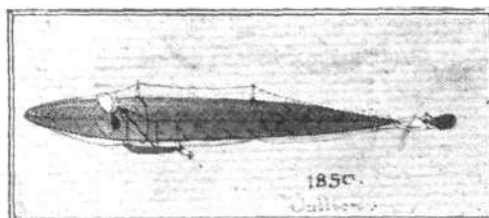
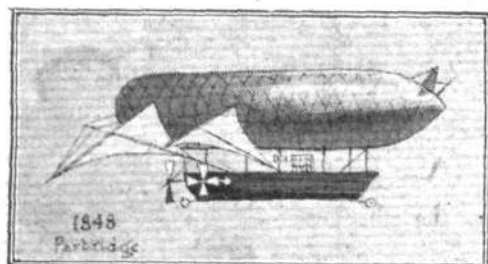


the subject it has been impossible to include the whole in one issue, and so the present instalment ends with the Barton airship of 1904. In our next issue we shall continue, tracing the development of the modern types of airships in various countries.

When once it was demonstrated by the brothers Montgolfier in 1783 that a spherical body filled with hot-air or hydrogen or similar light gases, could rise into the air and support a

and the envelope was upon the point of bursting when the Duke forced a hole through it with a flagstaff and thus prevented a disaster.

A safe descent was made and steps were immediately taken to remedy this defect. Two months later a second ascent was made with three up. An overflow outlet had been fitted and a rudder added, and although one of the three oars was accidentally broken, the airship covered an elliptical course,



load, it was only to be expected that the idea of the dirigible balloon at once presented itself. Gas-filled envelopes had already proved their superiority over hot-air ones, and so were adopted accordingly, but it was at once conceived that cylindrical or similarly shaped envelopes would be far more suitable for steering purposes than spherical or pear-shaped balloons. The only means of propulsion that suggested itself at first was by manually operated oars, and so, just a

and a safe landing was effected a little later 118 miles from Paris.

The same year General Meusnier designed an airship possessing several interesting features, the most important of which was the introduction of the "ballonet" system of regulating the pressure inside the envelope. The latter was double-surfaced, egg-shaped, with a strong rope net suspension supporting the car beneath. Between the car and

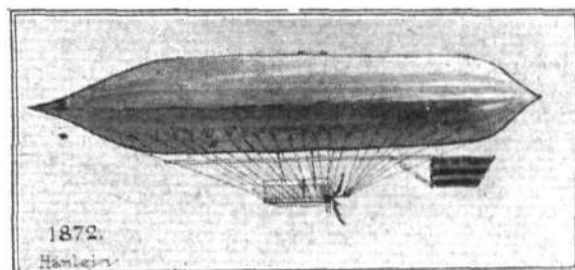
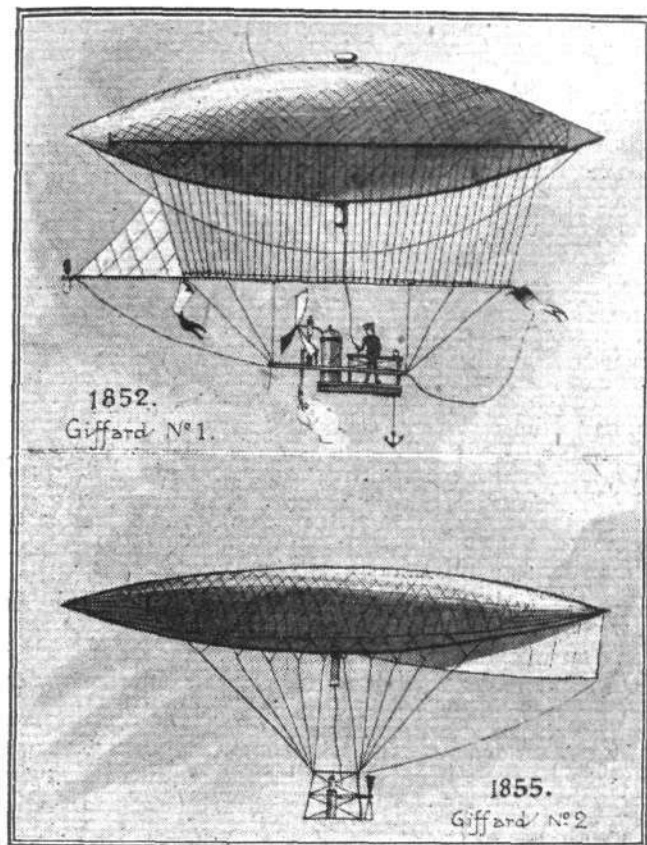
the envelope were three propellers, mounted in diagonal rigging one behind the other, operated from the car by hand. Variation in direction was provided for by means of a rudder at the rear. To counteract the variation of pressure of the gas, air was forced in between the inner and outer envelope when the gas contracted and *vice-versa*.

Another interesting design was produced in 1789 by a Baron Scot who proposed a fish-shaped envelope containing a ballonnet forward and two aft. These ballonets could be operated independently, thus varying the pressure at

third car that was intended to act as a shifting balancing ballast.

It was not until 1852 that the problem of the dirigible made any real advance. In this year, Henry Giffard, the inventor of the steam injector for boilers, constructed a steam-driven dirigible which attained a speed of about 6 m.p.h. in still air. The envelope was cigar shaped, 144 ft. long, and 40 ft. diameter, giving a capacity of 88,200 cubic ft., and was held within a net from which the leading lines extended to a horizontal pole running fore and aft ten feet below the envelope. From this pole was suspended a car containing the power plant. The latter consisted of a coke-fired boiler and a small engine driving an 11 ft. propeller. The power developed was 3 h.p. and the weight of the power plant was about 350 lbs. The envelope was fitted with an overflow outlet, and to provide against escaping gas reaching the fire of the boiler a wire gauze safety mask was fitted over the furnace door, and the chimney from the furnace was bent downwards so as to discharge the furnace gases beneath the car. Steering was effected by means of a vertical rudder flexibly mounted at the rear of the pole or keel.

In 1855 Giffard built another dirigible which gave rather better results. The envelope was much longer and narrower, measuring 230 ft. long by 33 ft. diameter, and having a capacity of 113,000 cubic ft. This time the car containing the steam plant—the same as before—was suspended directly from the leading lines of the net which was secured to a special stiffening covering on the upper part of the envelope. Underneath the envelope, from the stern to nearly the centre, there extended a triangular rudder. This airship proved somewhat faster than the previous model, and even succeeded in making progress, slowly it was true, against the wind. This ship was destroyed at the termination of the trial when about to land, the nose pointing upwards and the weight of the car causing the net to slip out of position and



either end of the envelope, as desired. It was intended by the aid of these ballonets to alternately point the nose of the airship up and then down, and so obtain a forward motion through this see-saw action.

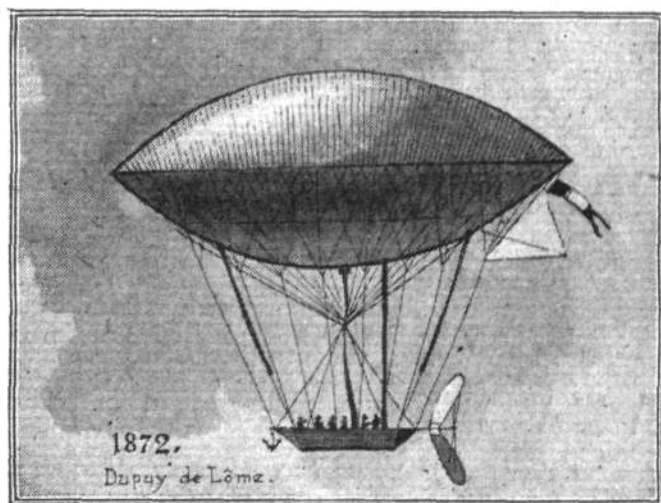
Comte de Lennox, of Paris, built an airship in 1834 which met with a very undignified end. This ship had a cylindrical envelope with conical ends, and was 130 ft. long by 35 ft. diameter. It was provided with a system of air ballonets for regulating the equilibrium of the ship. A long car was suspended immediately below the envelope, and contained accommodation for a large number of passengers. Propulsion was by means of some 20 oars, and four paddle wheels worked by men. On the day of the trial the ship refused to leave the ground, and was promptly destroyed by the on-lookers.

During the latter part of the eighteenth and the early part of the nineteenth century numerous schemes for dirigibles (many of an impossible nature) were brought forward, but without success. Mention might be made, however, of one design carried out by an Englishman, J. M. Partridge, in 1848, which is interesting in that the cylindrical envelope consisted of a light rigid framework covered with fabric. The complete envelope was covered with a light wire netting from which the car was suspended. The car had three propellers at the stern, driven, we believe, by compressed air. Sails, or planes, were provided for steering purposes. A ballonnet was used to regulate the variations of gas pressure. Several small trips were accomplished, but with little success as far as steering was concerned.

In 1850 Julien, of Paris, built a small model consisting of a long torpedo envelope with a boat-like car, suspended underneath near the nose, from which a propeller mounted high up on each side of the envelope was driven. Another interesting design was that of Meler (1851), who advocated the use of thin sheet metal for the envelope. He also had two cars suspended immediately under the body, one at each end, connected by a keel, from the centre of which was slung a

burst the envelope. Giffard and his companion, however, escaped with slight injuries, but nevertheless, no further experiments were carried out.

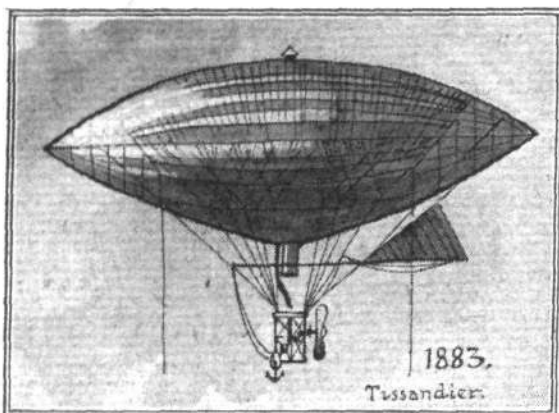
During the siege of Paris in 1870, the French Government authorised M. Dupuy de Lôme, a naval architect, to construct a dirigible, but it was not until 1872 that the trials took place.



De Lôme's airship had an envelope of much the same shape as Giffard No. 1, measuring 118 ft. long by 49 ft. diameter and having a capacity of 122,000 cubic ft. It was provided with a ballonnet, and a boat-shaped car was suspended from the net by diagonally crossed, as well as vertical, leading lines which rendered the connection extremely rigid. A triangular rudder was attached to the rear of the envelope,

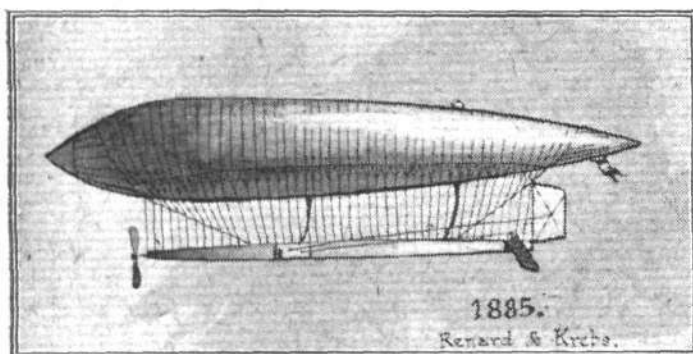
and at the stern of the car was a propeller nearly thirty feet in diameter, with about 160 sq. ft. of surface, which was driven by eight men. With this 8 h.p. motor, a speed (in calm air) of six miles per hour was obtained!

In 1872 was also produced a dirigible—designed by a German, Paul Haenlein—which, in appearance at all events, was a nearer approach to the present-day dirigible than any of the previous designs. The envelope was long and



cylindrical in shape, with conical ends, the nose being more pointed than the stern. It was 165 ft. long, 30 ft. diameter, and had 85,000 cubic ft. capacity, and was provided with a central ballonet. The car was strongly attached to the envelope by means of diagonally crossed lines attached to the envelope just below the equator line. The car suspension was further stiffened by a keel framework between the car and the envelope. At the rear of the car was a 15-ft. four-bladed propeller driven by a four-cylinder gas engine developing 3 h.p. The engine obtained its fuel from the coal gas contained within the envelope, the loss being made good by pumping up the air ballonet. The rudder was attached to the rear end of the keel. The speed attained in still air was 10 m.p.h.

The next airship of any note was that of the Brothers Tissandier, which was built in 1883, on data obtained from



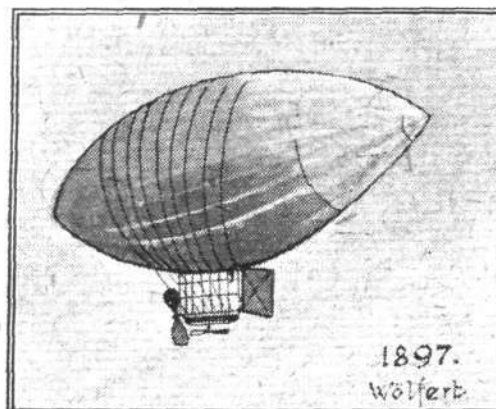
models. The envelope was very similar in shape to Lôme's, but was slightly smaller, being 92 ft. long by 30 ft. diameter, and 37,500 cubic ft. capacity. It was rendered more or less rigid by a wooden stay extending from point to point equatorially. The car, built up of bamboo, was suspended from a net, and contained a 1½ h.p. Siemens electric motor, driving a 9 ft. propeller, current being supplied by a bichromate battery. Speeds of 6 to 8 m.p.h. were obtained with this airship in more or less calm weather.

Another electrically propelled airship made its appearance the following year. It was built by MM. Renard and Krebs, and was certainly the most successful dirigible that had so far been produced. "La France," as it was called, had a cigar-shaped envelope, 165 ft. long, and 27 ft. maximum diameter at about one quarter length from the nose, and had a capacity of 66,000 cubic ft. It had a ballonet, and a net-covering from which a car 108 ft. long was very rigidly suspended by diagonal leading lines. The car, rectangular in section built up of bamboo and covered with silk, had at its forward end a tractor screw 23 ft. in diameter driven by a 9 h.p. Gramme electric motor, from a battery of chromium chloride cells.

Mounted at the stern between the car and the envelope was a peculiarly shaped rudder, consisting of two four-sided pyramids placed base to base. A sliding weight was employed to assist in maintaining the fore and aft balance of the ship, and the tractor-screw blades were so arranged that they could be raised out of the way of the ground when a landing was being effected.

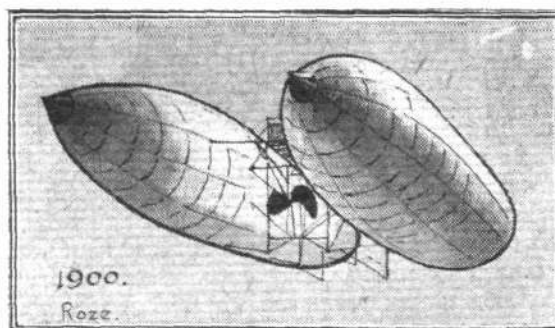
The first trials took place on August 9th, 1884, at Chalais-Meudon, when an out-and-home trip of five miles was successfully accomplished. Many other successful trips were achieved during the following 12 months, including a trip from Chalais to Paris and back. "La France" had a speed of 15 m.p.h. in calm air.

In 1880, Dr. Wölfert, and Herr Baumgarten, of Germany, carried out some experiments with a cigar-shaped dirigible



driven by an 8 h.p. Daimler benzine motor. There were three cars of bamboo rigidly suspended from the envelope, and a screw was provided beneath the cars for vertical movement in addition to a screw for propulsion. The first trial was not successful, for the balance of the vessel was upset on ascending, causing the airship to crash to the ground. Wölfert and his companion were uninjured, and in 1896, the former carried out some further trials with a new ship, but he experienced trouble with the motor. In 1897 he fitted a benzine vaporiser to the engine, and made another ascent with a passenger. When at a height of 600 ft. the ship burst into flames and fell to the ground, killing both occupants.

Next came the rigid aluminium dirigible of David Schwarz in 1895, referred to and illustrated in our last issue as the source of inspiration of Count Zeppelin. The cylindrical envelope had a conical nose and rounded stern; it was of sheet aluminium, .008 in. thick, built up on a framework of the same material. The car was rigidly attached to the envelope framework, and contained a 12 h.p. Daimler motor driving three propellers by means of a belt. One propeller was mounted on each side of the envelope, and the third, for steering purposes, was at the rear of and above the car. The total weight of the ship was a little over three tons. A trial flight was carried out by the military at Berlin in 1897, Schwarz having died early that year. The ship ascended to about 800 ft., but could not make any headway against



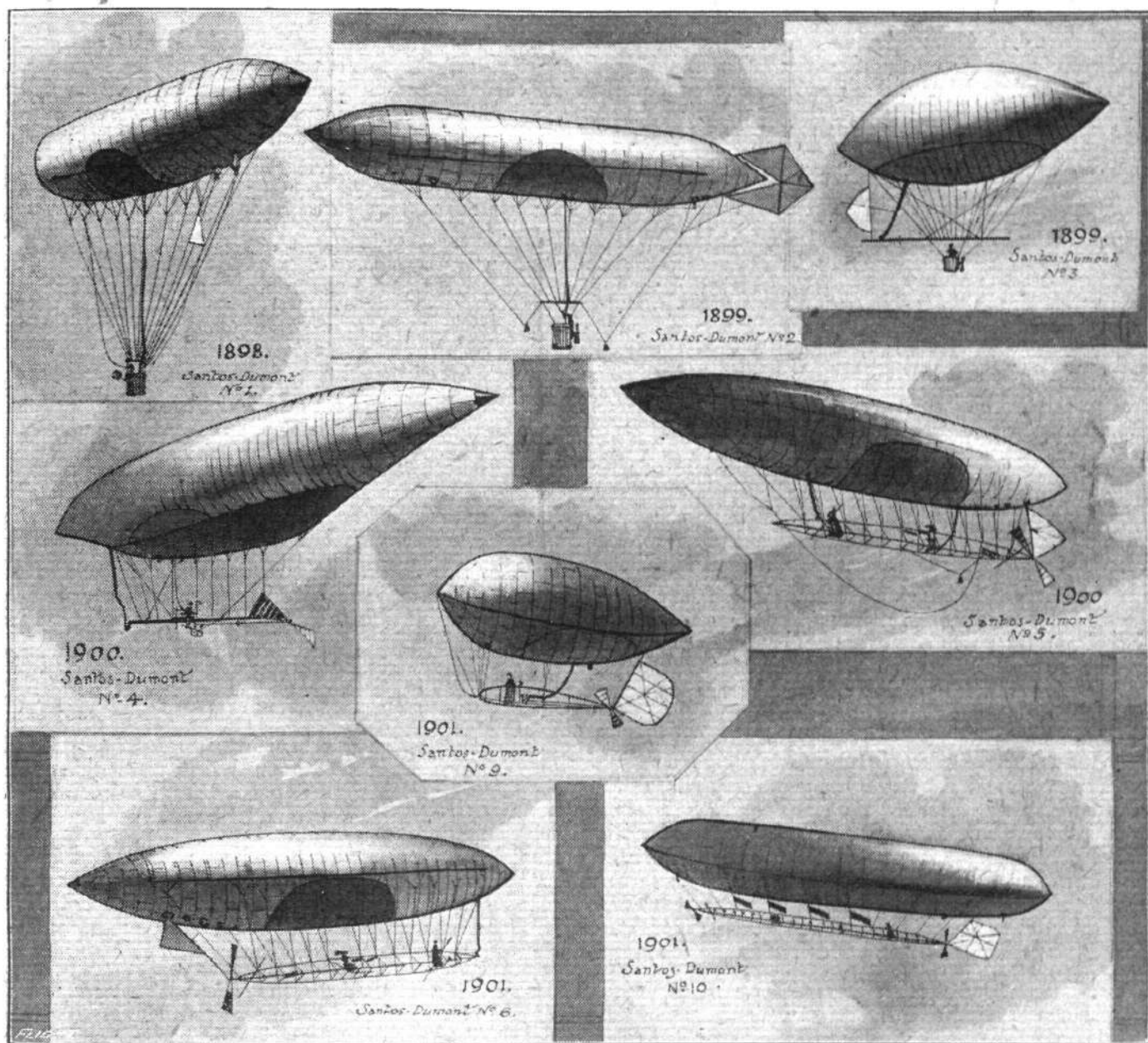
the wind. Eventually the driving belt came off the propellers and the ship was carried before the wind until the pilot opened the gas-valve and landed with slight damage. The wind and the spectators then completely wrecked the ship. Gas was introduced into the envelope in the following manner. Inside the envelope was a fabric lining which was

fully inflated with air. Gas was then forced in between the envelope and the lining, displacing the air from the latter, which, when empty, was withdrawn, leaving the envelope full of gas.

With the closing of the nineteenth century, the experiments of Zeppelin and Santos Dumont marked a new epoch, and there arose the nucleus of the airship as we know it to-day; a vessel capable of carrying out all that can be reasonably required of it.

The Zeppelin was fully dealt with in our last issue, and so we may proceed at once with the dirigibles produced by Santos Dumont. Up to 1901 he had built no fewer than 10 vessels, all more or less successful, and each succeeding one incorporating some improvement. No. 1, which made its

No. 2, which was built in 1899, was similar to No. 1, but was slightly larger in diameter, giving an extra capacity of seven hundred odd cubic ft. It was also improved as regards the ballonet, which, however, was again insufficient for the purpose, and the envelope doubled over on the first trial when the gas contracted during the ascent. In no way deterred, Santos Dumont built a third dirigible, which was completed six months later. No. 3 was of the same shape, but was much more stumpy, measuring 66 ft. in length by 24½ ft. in diameter, and having a capacity of 17,650 cubic ft. A bamboo keel was attached to the suspension lines, and from this keel the car was suspended. This arrangement made for greater rigidity, and also rendered it possible to dispense with the air ballonet and pump, whilst the larger



first trial in September, 1898, had a cylindrical envelope with conical ends, 82 ft. long, 11½ ft. diameter, and 6,350 cubic ft. capacity. No net was employed, the suspension cords of the car or basket being attached to wood-stiffened hems sewn in the sides of the envelope. The motor, a 3 h.p. De Dion motor-cycle engine, was mounted outside and in the front of the car, and was coupled direct to a small two-bladed propeller. The envelope was provided with a pressure release valve and an air ballonet, fed by a pneumatic pump. Steering was effected by a silk-covered rudder mounted at the rear between the car and the envelope, whilst ballast weights, arranged for and aft, enabled the ship to rise and fall as desired. This little ship manoeuvred well, and the only trouble experienced was with the ballonet, which was insufficient to retain the necessary rigidity of the envelope.

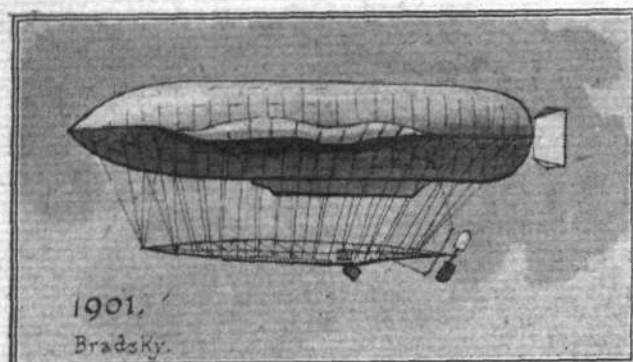
capacity allowed ordinary coal gas to be used. The rudder was mounted as before, and balance weights slid along the keel. Many successful flights were made with this airship, including all kinds of evolutions and a flight round the Eiffel Tower. It was, however, somewhat clumsy and under-powered, so a fourth vessel was designed and made its appearance the following year. No. 4 differed considerably from the previous models, not only in the shape of the envelope, but in the arrangement of the keel, which now carried the motor—a 7 h.p. Buchet—and pilot, who sat on a kind of bicycle saddle.

A tractor screw, mounted at the forward end of the keel, was also employed. An air ballonet and rotary pump and hydrogen were again employed.

Numerous successful flights were made on No. 4, which

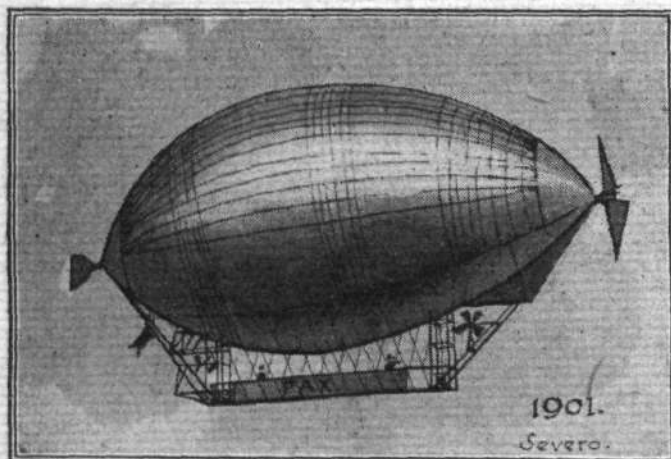
encouraged Santos Dumont to aim still higher, and so it was re-designed, and made its appearance shortly after with a new and larger envelope (109 ft. by 17 ft., capacity, 19,000 cubic ft.), a 12 h.p. Buchet motor, a built-up triangular-section keel of pine, piano-wire suspension, a propeller instead of a tractor screw, and water ballast. In other respects it followed the same general arrangement as No. 4. It was with this ship than an attempt was made to win the Deutsch de la Meurthe prize for a flight round the Eiffel Tower.

A series of accidents, terminating in the destruction of No. 5, however, prevented this feat from being accomplished,



but a few months later the prize was won on No. 6. This ship was an improved No. 5, having a slightly larger capacity, but otherwise possessing the same features. After winning the £4,000 prize, Santos Dumont took No. 6 to Monaco, where he made numerous successful ascents over the Mediterranean, until ballonet trouble brought him down in the sea. In the meantime No. 7, a "racing" dirigible, was under construction. This had a double envelope, 164 ft. by 26 ft., capacity, 44,500 cubic ft. It was fitted with a 60 h.p. water-cooled engine, driving a tractor and a propeller screw situated at the front and rear of the keel respectively. Of the subsequent dirigibles turned out, perhaps the most interesting was No. 9, called the "Little Runabout," as it was the smallest one of the series.

The envelope was egg-shaped, measuring 50 ft. by 18 ft., capacity, 7,770 cubic ft. in its original form; later it was

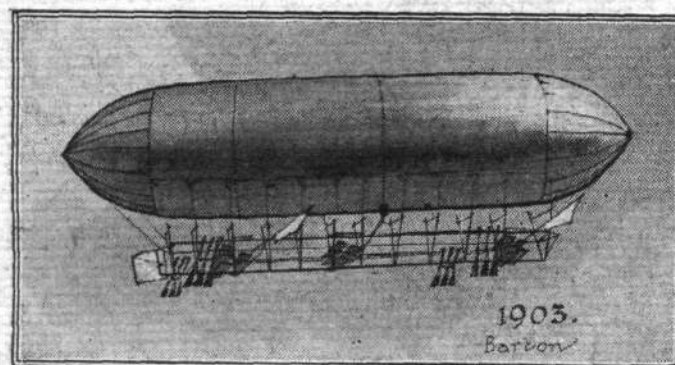


slightly enlarged. The keel, or car, contained a 3½ h.p. Clement motor, driving a propeller at the rear. It was extremely easy to manoeuvre, and had a speed of about 12 m.p.h. No. 10 was a larger model of No. 7, and was called the "Omnibus" on account of it carrying several passengers. Several other airships were also built by M. Santos Dumont after this, all more or less on the same lines, but possessing minor improvements.

Narrow Escapes of the Kaiser.

APPARENTLY twice recently bombs from the air have narrowly missed putting a period to the Kaiser's life. A message from Zurich states that a train in which he was travelling was recently struck by a bomb and the engine-driver killed. The Berne correspondent of the *Corriere d'Italia* says that a house in which the Kaiser slept during

Before dealing with the twentieth century dirigible—the real, practical airship—reference may be made to four other efforts. In 1901 a French inventor named Roze built an original double airship. It consisted of two cigar-shaped envelopes placed side by side with a framework between carrying the engine, the propeller, and the car. In this way it was supposed that the pitching and rolling of the airship would be entirely eliminated. The trials of the ship, however, proved to be a failure. The following year two experiments, both of which ended in disaster, were made by Augusto Severo, a Brazilian, and Baron Bradsky-Laboun respectively. The former's airship consisted of a spindle-shaped envelope mounted saddle fashion on a large bamboo frame. At the bottom of this frame, below the envelope, was formed the car containing two Buchet motors of 12 and 24 h.p. respectively. The former engine was forward, and drove a tractor screw mounted on the top of the framework in line with the central axis of the envelope. The rear motor drove a propeller similarly mounted. Before the trial took place other propellers had been fitted on the car, but these, together with the two ballonets, were dispensed with at the last moment. An ascent was made from Paris, and about 15 minutes afterwards the expending gas burst the envelope and the machine fell from a height of about 500 ft., Severo and his mechanic being killed. The Bradsky airship had a long cylindrical envelope, 111 ft. long, by 20 ft. diameter. A wooden frame was attached to the envelope equatorially



from nose to stern, and from this frame was suspended the keel or car, which was made of steel tube, and carried a 16 h.p. Buchet motor in the centre. This motor drove a propeller mounted at the rear of the keel. Accompanied by a mechanic the Baron ascended near Paris, but could make no headway against the wind, and when attempting to land the mechanic left his position by the engine and so upset the balance of the airship, causing the car to break away and dash the occupants to the ground.

Finally, in 1904, an Englishman, Dr. A. Barton, built a dirigible of comparatively large dimensions, and containing several interesting features. The envelope was 176 ft. long, by 43 ft. diameter, and contained the usual ballonets. A bamboo framework was attached to the envelope by steel cables. The framework carried two 50 h.p. Buchet motors, with their crank-shafts lying parallel with the keel, and transmitted through gearing and belt the drive to four sets of propellers.

Each set of propellers consisted of three pairs of blades mounted one behind the other, and situated on each side of the car, two forward and two aft. The drive also included large friction clutches, and each engine was under separate control. The horizontal balance of the airship was attained by means of water tanks placed fore and aft, water being transferred from one to the other as required. Elevation was obtained by means of a series of planes mounted at intervals along the framework. The Barton airship was tried at the Alexandra Palace in July, 1905, but did not come up to expectations owing to its imperfect controllability, with the result that it drifted away and was destroyed in landing.

(To be continued.)

his recent visit to the Western front was wrecked by a bomb from a French aeroplane a few minutes after the Kaiser, the Crown Prince and the Staff had left. It adds that practically all the Kaiser's personal effects, including several uniforms, were destroyed, together with a number of important documents, and some of the Kaiser's servants were killed.

THE FLYING SERVICES FUND—Administered by THE ROYAL AERO CLUB.

THE Flying Services Fund has been instituted by the Royal Aero Club for the benefit of officers and men of the Royal Naval Air Service and the Royal Flying Corps who are incapacitated on active service, and for the widows and dependants of those who are killed.

The Fund is intended for the benefit of all ranks, but especially for petty officers, non-commissioned officers, and men.

Forms of application for assistance can be obtained from the Royal Aero Club, 166, Piccadilly, London, W.

Subscriptions.		£	s.	d.
Total subscriptions received to Oct. 24th, 1916..	Collected at the Westland Aircraft Works, Yeovil (Fifty-fourth contribution)...	10,866	6	6
Proceeds of Concert given by the Ratings of the Royal Naval Air Station, Killingholme, Lincs. ...	Staff and Workers of Gwynnes, Ltd. (Twenty-sixth contribution) ..	0	18	6
		5	7	6
		8	1	11
Total, October 31st, 1916 ..		10,880	14	5

B. STEVENSON, Assistant Secretary.

166, Piccadilly, W.

THE ROLL OF HONOUR.

Reported by the Admiralty:—

Prisoners of War in Bulgarian hands.

Flight-Sub-Lieut. G. K. Blandy, R.N. (wounded).
Lieut. R. G. Blakesley, R.N.V.R. (uninjured).

Reported by the War Office:—

Killed.

2nd Lieut. R. Davis, R.F.C.
2nd Lieut. A. B. Drewery, R.F.C.
2nd Lieut. T. W. Nops, R.F.C.
Lieut. F. S. Rankin, Can. Eng., attd. R.F.C.
Lieut. N. MacL. Robertson, R.F.A. and R.F.C.
2nd Lieut. G. K. Welsford, R.F.C.

Previously reported Missing, now reported Killed.

Capt. J. O. Cooper, R.F.C.
Lieut. H. M. Corbold, R.F.C.
Lieut. O. V. Le Bas, R.W. Surreys and R.F.C.
Lieut. A. V. Oliver-Jones, R.F.A., attd. R.F.C.

Died of Wounds.

2nd Lieut. A. Cropper, Wiltshire and R.F.C.
Lieut. J. A. Stewart, R.F.C.

Wounded.

2nd Lieut. G. G. Callender, R.F.C.
2nd Lieut. M. J. Fenwick, R.F.C.
Capt. O. D. Filley, M.C., R.F.C.
2nd Lieut. P. C. Garratt, R.F.C.
2nd Lieut. I. M. Harris, King's R.R.C., attd. R.F.C.
Lieut. R. P. Harvey, Norfolk, attd. R.F.C.
2nd Lieut. A. Kock, R.F.C.
2nd Lieut. J. A. Simpson, R.F.C.
2nd Lt. F. Surgey, Cyclist Co. Divl. Mtd. Troops, and R.F.C.
2nd Lieut. W. B. Young, R.F.C.
45633 2nd Air Mech. S. C. Jenner, R.F.C.
27163 2nd Air Mech. E. Syme, R.F.C.
9782 2nd Air Mech. S. C. Taylor, R.F.C.

Missing.

2nd Lieut. W. Black, Durham L.I. and R.F.C.
Lieut. W. P. Bowman, W. Yorks, attd. R.F.C.
2nd Lieut. P. A. Bryne, D.S.O., R.F.A., attd. R.F.C.
2nd Lieut. G. Clayton, W. Yorks, attd. R.F.C.
2nd Lieut. R. L. Dingley, Worcestershire and R.F.C.
Lieut. P. C. Ellis, Highland L.I., attd. R.F.C.
2nd Lieut. W. F. H. Fullerton, R.F.C.
2nd Lieut. C. C. Godwin, R.F.C.
2nd Lieut. C. C. Hann, R.F.C.
2nd Lieut. J. N. Holtom, R.F.C.
2nd Lieut. C. M. Kelly, R.F.C.
2nd Lieut. F. G. W. Marchant, R. West Kent and R.F.C.
2nd Lieut. J. K. Parker, R. Scots Fus., attd. R.F.C.

2nd Lieut. N. R. Pomeroy, R.F.C.
Capt. L. Porter, R.F.C.
2nd Lieut. J. L. Pulleyn, Dorset, attd. R.F.C.
2nd Lieut. A. B. Raymond-Barker, R.F.C.
2nd Lieut. C. L. Roberts, S. Lancs., attd. R.F.C.
2nd Lieut. G. B. Samuels, Durham L.I., attd. R.F.C.
2nd Lieut. A. L. M. Shepherd, King's R.R.C., attd. R.F.C.
2nd Lieut. T. G. G. Sturrock, R. Scots, attd. R.F.C.
Lieut. J. Thompson, R.F.C.
2nd Lieut. W. J. Thuell, R.F.C.
Capt. C. R. Tidswell, Dragoons and R.F.C.
Lieut. G. Wadden, R. Irish Fus., attd. R.F.C.
2nd Lieut. O. J. Wade, R. West Kent and R.F.C.
2nd Lieut. R. Watts, R.F.C.
2nd Lieut. W. T. Willcox, W. Yorks and R.F.C.
Lieut. W. H. N. Whitehead, Can. Cav., attd. R.F.C.
2nd Lieut. J. C. Wilson, Black Watch and R.F.C.
3049 Sergt. A. Clarkson.
6709 1st Air Mech. A. Grundy, R.F.C.

Previously Unofficially, now Officially, reported Wounded and Prisoner of War in German hands.

2nd Lieut. C. W. P. Selby, R. West Kent, attd. R.F.C.

Previously reported Missing, now reported Wounded and Prisoner of War in German hands.

2nd Lieut. A. F. A. Patterson, R.F.C.

Previously reported Missing, now reported Prisoners of War in German hands.

Lieut. W. H. S. Chance, Worcester Regt. and R.F.C.
2nd Lieut. D. Cushing, R.F.C.
2nd Lieut. C. Geen, London and R.F.C.
2nd Lieut. C. J. Kennedy, R.F.C.
2nd Lieut. T. P. L. Molloy, Dorset and R.F.C.
2nd Lieut. J. K. Tullis, R.F.A. and R.F.C.
Lieut. R. D. Walker, R.F.C.
Capt. O. L. Whittle, S. Lancs. and R.F.C.

Previously reported Missing, now reported Prisoners of War.

10387 2nd Cl. Air Mec. T. N. Robinson, R.F.C.
1746 Sgt. G. Topliffe, R.F.C.

Believed Taken Prisoner at Kut-el-Amara.

3388 2nd Cl. Air Mech. W. Fairhead, R.F.C.

Corrections:

Wounded.

2nd Lieut. S. M. Smith, London and R.F.C. *should read*
2nd Lieut. H. S. Martin-Smith.

Missing and Prisoners of War in German hands, *should read Missing.*

2nd Lieut. A. Douglas, R.F.A. and R.F.C.
2nd Lieut. V. F. H. Hugill, R. Fus., attd. R.F.C.

Fatal Accidents.

At an inquest held on Lieut. R. C. V. Inkpen on October 24th, it was stated that while he was flying at a height of 80 ft. the machine side-slipped to the ground. The opinion was expressed that the deceased was trying to climb too steeply.

A verdict of "Death by Misadventure" was returned at an inquest on C. E. Tombs, an air-mechanic who was killed in an accident on October 23rd. He was acting as observer in a machine piloted by Lieut. Mytton, which became un-

manageable and crashed to the ground, the pilot being severely injured.

Leonard Savage, 13, the son of a miner, was killed at Edlington, near Doncaster, on October 27th. At the inquest the evidence showed that Lieut. Kiddie, of the R.F.C., whilst flying from London to the North, alighted at Edlington Recreation Ground. On restarting his machine struck the deceased, killing him on the spot. The jury returned a verdict of "Accidental Death," and found that no blame attached to anybody in connection with the sad affair.





ARMCHAIR REFLECTIONS

BY THE "DREAMER"



I DREAM of the time when the aeroplane will be *tamped* out; when a few men will pull a few levers and a few other men will fuss around with dashboards already fitted up with instruments, plus a couple of wheels and a bit of sheet metal, and, behold, an aeroplane.

It is to J. M. Barrie we are indebted for the foreman compositor who knew "copy" by only two names, "News" and "Tripe," and I have sometimes wondered under which heading he would have placed the sheets of matter emanating from the clouds of steam given off from the wet towel surrounding the head of the "Dreamer." Yet I know what becomes of that "copy." I recognise above all others the footfall of the imp from below trudging up the stairs to my office, accelerating in the last few steps, and bursting in with "Copy, please Sir."

All the rush of a great business establishment is upon the shoulders of that imp. He must come and be gone before the smoke of his Woodbine can creep out from under the folds of his apron. His intimated impression is that all the vast personnel of that side of the business which is not "Editorial" await the coming of my sheets.

I know what happens to them, these pages of wonderful things. I am fully aware of the fate awaiting that which I might have fondly hoped would gain for me the inclusion of my portrait by Moreland in that wonderful gallery adorning the walls of the Press Club Smoke Room. I will tell you. The idea of the whole comping department waiting my pleasure is for the cajoling of the reader into impressions of importance. The real facts, told in secret, are these: My "copy" gets stuck on the copyholder of a machine like a huge typewriter. A man rattles the keys and pulls a few levers and treads on a few pedals, and in minutes a yard or so of "Galley-proof" is lying on my desk for corrections.

The fact is it is machine made. I wonder they trouble me to operate initially. The man on that other machine could turn out "Armchair Reflections" at the rate of a thousand a day, providing they were all alike, and there comes the rub.

I had the pleasure of a visit of inspection, graciously accorded by the Authorities, of that marvellously intact Zeppelin grassed in Essex. Readers will have gathered, from the pictures in our last issue, what a wonderful piece of construction it was, and how comparatively simple was the assembling of the various parts into a splendid whole, by reason of the thought that had been given to the standardisation of parts.

I have not yet heard of any German aeroplane captured "out there" which had been built on Zepp. construction lines, but I have no doubt at all that sooner or later such will be the case. Then, I suppose, when we have it clearly demonstrated to

us that it can be done, and that the present method of slow and costly construction is not the right one, we shall get to work ourselves.

There are those in this office whose brains bulge with technical knowledge. They might tell me that it can't be done. I shall not enquire of them before writing these words, because they instantly feel for pencil, and go into long lines of equations to prove to their own satisfaction, if not mine, that it is against all established laws. These experts bother me with their figures. They work it all out on paper to my undoing. They will manufacture hydrogen in some mysterious fashion from zinc and acid before my very eyes, fill a silk envelope with it, and tell me that that quantity will lift exactly one pound. Yet when I get a pound weight, stamped officially correct by the Weights and Measures Office, and offer to bet them a shilling that it won't, they have not the courage of their convictions. They are equally shy if I offer to bet that it will. They are wary of cast-iron statements, these science fellows. They always want to introduce some such hedging as "Of course that is providing—" or "Allowing, of course that all things are equal." They tell me that an apple with the inside eaten out by wasps, and a leaden ball of the same dimensions will fall side by side when dropped from a great height "providing of course we ignore" something or other. I believe Sir Isaac Newton was satisfied to experiment with an apple. Possibly the leaden ball would have answered equally, provided he had ignored his scientific nose.

When I looked at that huge affair of aluminium in Essex, I could see that the building up of the mass was something that could be done quickly and with certainty. Things were standard. It was a question of girders braced with cross strappings. The parts could all be stamped out, and fitted together like "Mecanno" built toys.

I did not see any steel tubing that had had to be patiently rolled by hand to smaller diameter in certain parts of it. The blue-prints necessary to its construction must have been great in number, but simple in their reading. It appeared that the whole hull of her could be made by the thousand foot run, sawn off into lengths, and fitted together.

Engineers, bridge-builders and the like, are whales on building things of metal that shall fit. They will cheerfully build here in London, a bridge for Timbuctoo, send it out in sections, and be sure that when erected out there it shall fit to a millimetre. They have been through the school that teaches the value of that little sixteenth of an inch, which looks so small and means so much. Some day, when they realise what is wanted, one or more of them will astonish us by stamping out an entire aeroplane in parts that could be fitted up in less than no time with the aid of a shilling spanner.

Personally, I see no reason whatever why aeroplanes of given types could not be standardised and built of stamped parts. Neither do I see what there is against steel propellers, stamped out in halves and welded at their joining edges. Possibly there is some reason why it cannot be done, possibly there is not. I cannot put pencil to paper and prove that at one-thousand-two-hundred-point-five revs., the spelter would become demoralised and refuse to stick tight. Any way, the method of building as known to-day is a comparatively slow process, and expensive. They have to be constructed of woods dear and rare. These woods have to be grown during the progress of years. Possibly before the coming of the aeroplane we built our hen-coops and dog-kennels of some of it. We can't manufacture ash and walnut



"THE THEORY OF STRUCTURES."

WITH the enormous developments in aeroplane construction and growth of the aircraft industry, the time has long since gone when rule-of-thumb methods of design and construction were permissible, and, indeed, had to be for lack of anything better in the way of a sound foundation of combined theoretical knowledge and practical experience. Instead of the trial-and-error process so characteristic of the earlier days of flying, the science of aviation has now reached a stage where, although nothing like finality has been reached, we are at least in a position to predict with a fair amount of accuracy the performance of an aeroplane, provided it does not differ too radically from existing types. Instead of the anxious question of the old days "Will she fly?" the uncertainty has now been reduced to a question of whether "she" will come within a mile or so either way of the anticipated speed, or within a 100 ft./min. of the calculated climb. For this ability to estimate aerodynamic quantities beforehand we are largely indebted to the various aerodynamical laboratories, since their wind tunnel tests, coupled, of course, with the practical experience of the individual constructors and designers, provide the only data to build upon.

In the matter of carrying out mechanically the construction of the parts decided upon from aerodynamical considerations, great strides have undoubtedly been and are constantly being made. For machines of standard proportions practical experience has already settled pretty definitely the size, shape and material for the various component parts necessary for the requisite strength. As, however, the size of aeroplanes increases, new methods of construction will suggest themselves, and what has been found by experience to be good practice in the case of the smaller machine may quite conceivably be found inadequate when it comes to building machines that are out of the ordinary either as regards weight distribution or size, or both. It is in such a case, when there is no precedent, so to speak, in the aircraft industry itself, that advantage must be drawn from the experience gained through a number of years in other branches of engineering, and this experience applied to the special requirements of the aeroplane constructor. There can be little doubt that there are a number of students of aviation and even probably a few practical designers who, although well versed in the aerodynamical problems of flying, are somewhat at a loss when it comes to determine the various stresses set up in an aeroplane under the different conditions obtaining during even a straight forward flight. It is at this juncture that one has to look to other branches of engineering for information, and the branch that immediately comes to mind in this connection is naturally that of structural engineering. Of the books dealing with this subject we have not yet seen one that can approach the volume entitled *The Theory of Structures*, by Arthur Morley, M.Sc., M.I.Mech.E., Professor of Mechanical Engineering in University College, Nottingham. This book, which is looked upon as a classic in structural engineering circles, although not being written with a view to aeroplane structures, contains such a wealth of general information as to render it of the greatest value to aeroplane designers and students of aeronautics in general. From the elementary

and the like; presently, with the building of machines by the ten-thousand, it will become the radius of the timber-world. We can manufacture metal. Failing one which we require on account of its lightness, we can substitute another altered in its shape to give strength.

Aeroplane builders will not always have to consider weight as they do to-day. The machine of the future will be a gigantic affair. We are in an age of progress. I might even yet live to see the day when I shall supply "Armchair Reflections" by pulling out certain stops, and pressing certain buttons and pedals. Perhaps with the final full stop a bell will ring and my emolument drop into a tin box. In most cases metal triumphs over wood. Look around you and notice.

explanation of stresses and strains, dealt with in the simplest and most easily understood language, the author proceeds through easy stages to the more complicated problems dealing with a great variety of different structures. Both graphical and mathematical solutions are given, and the book is rendered all the more valuable by the number of numerical examples given. It is published by Longmans, Green and Co., of Paternoster Row, at 7s. 6d. net, which, in view of the character of the book, is exceedingly cheap. To assist our readers it can be obtained from "FLIGHT" office, post free for 8s.

AERIAL RUSSIA.

"THE British unfortunately have in the past known little and cared little about Russia. The Russian Empire has remained a mystery, and even now, when the two nations are bound by a most cordial friendship and are fighting a great war in loyal alliance, the large British public remains absolutely ignorant concerning the realities of the vast Empire of the Czar."

This statement taken from the introductory chapter of the book, "Aerial Russia," by Lieutenant-Colonel Roustam-Bek may be accepted as a general truth, and we are in whole-hearted agreement with the author in his regret that this is so. Knowing that the author realises this shortcoming, and having read the title of his book, one opens it in the hope of gleaning from its pages some valuable knowledge of the historical development of Russian aviation in general, and the large aeroplane in particular. Unfortunately, having read through the 150 odd pages, one closes the book with the impression of having learned precious little about the work of Sikorsky and other pioneers of the large aeroplane, while obtaining only a rather vague picture of some of the personalities that have helped to make the aviation history of Russia. As a matter of fact, the short descriptions of Russian aeroplanes, and short paragraphs regarding their activities, published from time to time both in "FLIGHT" and other journals, meagre as they have been, tell one a good deal more about aerial Russia, and under a far less presumptuous title, than does this "Romance of the Giant Aeroplane."

When the author says that Russia is at present, from a purely scientific point of view, undoubtedly leading the whole world in the conquest of the air, we are inclined to think that his patriotism has got the better of his judgment. Again, the statement that up to the outbreak of war the only British subject who had ever flown in Russia was a Scotsman—Mr. Mackenzie-Kennedy—can hardly be accepted, since it is a well-known fact that the old-time Hendon pilot, Lewis F. W. Turner, now an officer in the R.F.C., flew on a Farman over the outskirts of St. Petersburg late in 1911. The machine, by the way, which he was to have flown was being built by Mr. Kennedy, but was not completed in time for testing before the Russian winter set in. Altogether one cannot refrain from regretting that the author of "Aerial Russia" has—if he was in possession of the needful data—missed an excellent opportunity of really enlightening the British public on the true value of Russian aeronautics.

Mr. John Lane is the publisher, the price is 2s. 6d. net, and about a score of illustrations accompany the text.

ANSWERS TO CORRESPONDENTS

If in doubt about anything aviatric, write to "FLIGHT" about it.

F. H. B. (Birmingham).

A "lifting tail" is one which normally carries a certain amount of load, and which is therefore often cambered in order to make it more efficient. For instance, the tail planes of the old Farman biplanes were "lifting tail planes," and were, as a matter of fact, rather heavily cambered. By a non-lifting tail plane is meant one which does not, in the normal flying attitude, carry any portion of the load, but is merely "floating." This type of plane is usually, although not invariably, made of symmetrical section—i.e., it is either a perfectly flat plane, built up of a framework of steel tubes, or it is constructed of spars and ribs after the fashion of the main planes, but symmetrical in section and convex on both sides. The object of the latter form of section is, of course, to provide a good "streamline" shape which will offer a minimum of resistance. During flight it constantly occurs that such a tail plane is momentarily loaded, the load being either upwards or downwards according to circumstances, and then, of course, the tail plane is no longer, strictly speaking, "non-lifting." It was mentioned that a non-lifting tail plane is not invariably symmetrical in section. Some designers favour a section in which the upper surface is convex, while the lower surface is perfectly flat. The reasons usually advanced for the employment of such a section are that, as the tail planes may—and, indeed, frequently do—work in the down draught from the main planes, a tail plane set parallel to the path of the machine, or, in other words, parallel to the propeller shaft, is virtually subject to a load acting in a downward direction. Now, an unsymmetrical tail plane like that referred to above is still giving a certain amount of lift at a angle of incidence, whereas the symmetrical section would, of course, give no lift when the incidence was zero. The plano-convex section therefore tends, owing to the slight lift at no angle of incidence, to counteract the effect of the down draught from the wings, and may therefore be said to be equivalent to a flat or streamline plane set at a slight angle to the propeller shaft. The tail plane of the B.E.2C, as is the case on the majority of modern machines, is of the non-lifting type.

G. B. (Teddington).

A "spirally unstable" machine is one in which the fin area is incorrectly proportioned. The vertical fin area of an aeroplane, as is well known, is composed of the vertical sides of the body, the inter-plane and chassis struts, the landing wheels (especially if these be of the "disc" variety), the propeller, the vertical tail fin. We do not include the rudder, as, to our way of thinking, a machine should be spirally stable even when its rudder is left to itself, i.e. trailing. Now, if the total side area of all these items has its centre of pressure in front of the centre of gravity of the machine, and the latter is subject to a relative side wind, such as may be caused by an incorrectly banked turn, it will be seen that a couple is set up, which tends to increase the sharpness of the turn. This, then, is the cause of a "spin." Theoretically there is no reason to suppose that a "pusher" is more liable to spin than is a tractor; the problem resolves itself into a proper distribution of side area. In practice, however, it will be found vastly more difficult to "balance up" a "pusher" than a tractor. The Caudron, by the way, is not a "pusher." The uphill gildes made by Mr. Raynham on the 80 h.p. Avro biplane were made by first diving the machine with the engine running so as to get up speed. The engine was then switched off and the momentum of the machine enabled it to glide a short distance uphill. This glide is not peculiar to this machine only, but may be, and has been, done on other types. The outer envelope of a Zeppelin airship is made of a stout fabric laced to the girders.

H. S. C. (Loughborough).

The chief reason for staggering the planes of a biplane is that by so doing a better view is obtained in a downward direction. There is also a small gain in efficiency when the planes are staggered, but as this only amounts to about 4 per cent., and staggering increases constructional difficulties, it would scarcely have been so extensively employed as is the case, but for the practical advantage mentioned above. The ratio between the area of the main planes and the area of the tail planes depends on so many factors, that no hard and fast rules can be laid down. In the first place, the travel of the centre of pressure varies considerably with different wing sections, one with a small travel of the centre of pressure obviously requiring a smaller tail area than does one in which the travel of the centre of pressure is great. Also the distance between the centre of gravity and the line of total reaction on the main planes for all the different flying attitudes of the machine will be a determining factor in the calculation of tail area, while the plan form and section of the tail itself will affect the area required, a tail plane of high aspect ratio being more efficient than one that is nearly square. Again, a machine in which the centre of thrust does not coincide with the centre of resistance will require a certain amount of tail area to counteract the couple thus set up. Generally speaking, for a given machine the farther the tail is from the main planes the smaller it may be kept, but lengthening the body means adding weight, and may mean adding resistance, so that in this case, as in so many others, a compromise has to be made.

R. W. (Hants).

We are not sure whether, under the new arrangements now in force, the grant is being made. He should apply to the Director-General of Military Aeronautics, Adastral House, London, E.C.

E. L. J. (Farnham).

Simply obtain from the Admiralty the necessary forms on which to apply for a commission, and, having filled them up, send them to the Director of Air Services, Admiralty, S.W.

E. O. (Sheffield).

There are vacancies in the Corps from time to time for skilled tradesmen, and your best course would be to inquire of the Officer in Charge of Recruiting, R.F.C. Depot, Farnborough, as to whether there are any vacancies at the present time.

H. A. (Redcar).

1. The pay of a flying officer, R.F.C., when training is 7s. 6d. per day. 2. An R.N.A.S. Flight-Sub-Lieut. receives an additional 4s. a day when confirmed in his rank, making a total of 18s. 0d. per day. 3. He should apply to Adastral House for the necessary forms.

Ignorant (Gala).

A 2nd Air-Mechanic in the R.F.C. is only promoted to 1st Air-Mechanic in the usual way, and a "short training in London with a first-class certificate for driving and repairing a car" will not entitle you to promotion immediately.

F. H. M. (Barnet).

Lieut. R. A. Cammell was flying a Valkyrie monoplane when he was killed at Hendon, September 17th, 1911. The world's altitude record for a balloon is 10,800 metres, made by Suring and Benson from Berlin on June 31st, 1901. An airship cruises rather than flies—the latter term is usually accepted to apply to machines which are kept in the air either by their own volition or by the force of the wind. The average speed of Prevost in winning the Gordon-Bennett race of 1913 was 200 kilometers per hour.

V. G. A. (Teynham).

There is a Cadet Corps for the R.F.C., and you should apply to Adastral House for full particulars.

AIRISMS FROM THE FOUR WINDS

GOOD news for new Service members of the Royal Aero Club. Commencing with this week, it has been decided by the Committee that no entrance fee will be charged to Naval or Military officers joining the Club, so that they will have the opportunity of becoming full members for their annual subscription only, which carries with it the advantages of the new Club House in Clifford Street, Bond Street, which, it is hoped, will be opened in about another month. In the meantime the address is at the old rooms in 166, Piccadilly.

A FREE translation of the meaning of *Gott strafe England* by a non-German-speaking English Tommy prisoner in Königsbrück Camp is to hand per Sergt.-Major Beaussier, of the French Army. Tommy was taken one day by a German N.C.O. before an inscription, "Gott strafe England," and was asked in English, "You know what that means?" "No," said the English prisoner, "I can't read German." "It means," said the German N.C.O., "God punish England." "Because you can't punish her yourself, I suppose," was the prisoner of war's ready response.

DRIVERS and conductors of trams in the metropolis are in future to be warned by the L.C.C. Highways Committee of possible hostile air raids, thanks to the action of the Commissioner of Police.

It would appear as if the Commissioner is out for "notifying" generally, possible air raids upon a much more generous scale than has hitherto prevailed, as in the programme of "Elijah" at the Albert Hall last Saturday there was an announcement in the following terms:—

"Arrangements have been made that warning of a threatened air raid will be communicated to this hall by the military authorities.

"On receipt of any such warning the audience will be informed with a view to enable persons who may wish to proceed home to do so.

"The warning will be communicated, so far as possible, at least 20 minutes before an actual attack can take place. There will, therefore, be no cause for alarm or undue haste.

"Those who decide to leave are warned not to loiter about the streets, and if bombardment or gunfire commences before they reach home they should at once take cover.

"By order of the Commissioner of Police of the Metropolis."

"THE fourth element of war" is how wounded men in the recent fighting in France describe the indescribable new ally of Germany—MUD.

PROBABLY so that neutrals may not detect the lies manufactured for home consumption by the German war disseminator of "victories" and other successes, when the capture or destruction of a few dozen "Tanks," more or less, is claimed, they are now disguised as "Panzerkraftwagen." There's nothing of the Macfie sound about this.

EVIDENTLY Count Zeppelin's airship company expects a huge influx of business, consequent upon the recent strafing of the four air pirates this side of the North Sea, as the report is to hand that the company's capital has been doubled, from £75,000 to £150,000. In the same ratio, with a few more visits, it should not be long before the capital should soar away beyond the million.

SOME "sky-pilot"! The Surrey curate who has just taken a commission in the Royal Flying Corps.—*Passing Show.*

ELSEWHERE in this issue it is recorded that the famous German pilot, Boelcke, has met his death, but whether at the hands of one of our pilots or in a bad landing following a collision in the air with another machine does not yet seem to be quite clear. Capt. Boelcke was not, as many people appear to think, one of the old hands in aviation, having,

to the best of our belief, never done any flying until early in the war. He is credited with having brought down some 40 Allied aeroplanes, and was, like his *kamerad*, Immelmann, one of the few crack Fokker pilots. The secret of the success of his tactics appears to lie in the fact that he would swoop down on his adversary like a hawk, and that, if he failed to bring him down the first time, he would never return for a second attack, at least not at once. As his success was in a large measure due to the type of machine he was flying, a few personal items concerning, not the machine itself, as the Fokker has been fully described already in our columns, but the constructor of it, Mijneer Fokker, may not be without interest.

ANTHONY HERMAN GERARD FOKKER was born at Kediri, on April 6th, 1890. He left India at a young age and went with his parents to Haarlem, where he spent his schooldays. As a youngster he was always interested in mechanics, and his great ambition from the earliest days was to become a pilot some day. It was not until 1910 that young Fokker, whose portrait we give through the courtesy of our Dutch contemporary, *Avia*, obtained his parents' permission to go to Germany in order to learn to fly. While at the Goedecker School at Gonzenheim, near Mainz, he learned his art, but was in no hurry to obtain his "ticket," which, as a matter of fact, he did not go for until 1911, when he obtained it in "good style," as the school reports generally have it, on a machine of his own construction.

AFTER leaving Gonzenheim, Fokker transferred his activities to Johannisthal, where he started a school and some very modest works. It can hardly be said that Fokker had an easy time of it at first, partly on account of the keen competition with much larger firms, and partly, possibly, because he was then still a foreigner in Germany. It may be remembered that several very good flights were made on the old type Fokker monoplanes (which were characterised by sloping back wings and no lateral control), among others that made by de Waal in 1913 from Johannisthal to Soesterberg in Holland. Demonstration flights were made at The Hague in the presence of military representatives, which resulted in Fokker going to Germany, where he became naturalised.



A. H. G. Fokker.

It was not, however, with his original monoplanes that Fokker came to the fore, but with what in all fairness can only be described as imitations of the French Morane, constructed, it is true, on different principles, but resembling it closely in general lines. Even before the outbreak of war the works at Johannisthal became too small, and others were started at Görries, near Schwerin. After a few months of war several Berlin bankers took the firm over and all the Dutch capital was bought out, Fokker himself becoming the director as well as one of the chief shareholders. Later he brought out a small monoplane which had a speed of some 200 kilometres per hour, and into this he fixed a machine gun that fired through the propeller. Fokker himself claims little credit for the machine, we believe, but he does claim to be the first to mount a machine gun in this fashion and to sight by means of the aeroplane controls. Hitherto the impression has been general that the famous French aviator, Garros, was the first to fire through the propeller. Be that as it may, for some time the Fokker monoplanes were the rage in German flying circles, and although they were, to our way of thinking, very much overrated, they certainly did excellent work in the hands of such crack pilots as Immelmann and Boelcke. The growth of the Fokker firm has continued rapidly, so that now, in addition to various works in Germany, there are branches in Buda Pest and Constantinople.

THAT International Airship Corporation which has so many times been brought into existence in Berlin for the purpose of establishing a regular aerial post and passenger service between Berlin and Constantinople is still bobbing about in different forms. The latest phase of the little scheme puts the capital at a million and a quarter pounds sterling, and a special bait is being trailed to lure in subscriptions from the unwary to the wily promoter handling the finance. The present plan is to have the route extended from Berlin to Carlsbad, continuing to Vienna via Budweis, from there to Buda Pest, and thence on to Constantinople, over Sofia. Between these larger cities are to be numerous landing stations, the districts chosen for landings having to subscribe for shares.

At least this latter ruse is *not* a German brain-wave, as the idea has been quite a feature of motor and aviation circuit tours in France for years past. But we fancy the German public will not be too ready to help to have this air route in being for the Allies to annex presently when matters Continental smooth themselves out.



The Zepp. Raids, as seen in the United States.—
"Gaining experience." (By courtesy of the "Newark
Evening News.")

THE WATCHER IN THE NIGHT.

Up in the night,
Thick blackness around,
And never a sound
Save his engine's roar,
The Airman waits . . . waits . . . waits . . .
Patient as fifty Fates :
His hands are sore,
And his feet are frozen—
Who would have chosen
A task like this
But for the kiss
Of a loved one, lying asleep below,
While he waits aloft for the skulking foe ?
Or for England's sake
Does his valour wake,
Where the stars stare bright,
Up in the night ?
Up in the night.
Sudden, from distant earth,
Light springs to birth—
Light !
Its pencil pierces, and shifts . . . and stays . . .
And there, in the chill unwinking blaze,
Hovers, perturbed, the Form of Dread !
Swift overhead
The Airman dashes down to his prey :
Nearer he dives, and yet more near,
Till, poised like Vengeance over it sheer,
His moment's come—
His bolt strikes home !
He sees the monster sway,
Tremble, and strive to turn away :
Another bolt he launches . . . and another !
Quick rush the flames along its side,
And, through the smoke and smother,
Come up to him, bursting with joy and pride,
Exulting in the battle,
The thin machine-gun's rattle,
And . . . thinner dreadful cries of agony !
It falls : a streaming flame all down the sky,
In hot air-eddies turning,
And burning, burning, burning !
At last it strikes the earth : a rending crash,
A thunderous roar, a blinding flash
That lights the sky for fifty miles . . .
So . . . that's all over,
That ends the fight
His loved one shall sleep safe to-night !
No longer need the Airman hover
He smiles
His work is done
His battle's won !
Up in the night. —ARGENT. (Passing Show.)

QUEEN MARY'S Zepp. £21 souvenir brooch, presented by Her Majesty to the British Red Cross, looks like bringing in quite a nice little sum to the Fund. Firstly, it was sold by auction at the Gift House of the Red Cross Society, Pall Mall, to the highest bidder. The purchaser was Mr. M. Mouchly, of Port Said, whose bid was £20. He intends to present the brooch to the Red Cross in Egypt, and hopes that it will fetch at least £500 there. It is made out of a portion of aluminium from the L. 21, which was wrecked at Cuffley, and bears the inscription "Zepp. L. 21, 1916. Sept. 3rd, Cuffley." By the time it gets round the world it should have a good trail to record.

THERE must still be a lot of quaint predictions "undiscovered" in forgotten works relating to the navigation of the air. One by one they are being brought to light, and some are, by their insight into the future, of striking interest. The Rev. J. P. Bacon Phillips, of Crowhurst Rectory, Sussex, has just unearthed another of these curious prophecies. It is to be found in Ackermann's Repository for the year 1825, and reads as follows : "Balloons will next come into play. Then adieu to the greatness of Old England. We cannot expect to cut such capers in the air as we have done on the sea. We shall have too many and too powerful competitors on that element, which is alike open to all. *Delenda est Carthago.*" Had we read these words a few weeks ago, Mr. Phillips writes, they might have filled our minds with apprehension. Now, however, we are able to hold our own.

COL. SIR H. CAREL L. HOLDEN, Vice-Chairman of the Royal Aero Club, who is the Director of Mechanical Transport, has been elected the Upper Warden of the City Guild of Gun-makers. He entered the Royal Artillery in 1875, and for several years before he retired in 1912 was the Superintendent of the Royal Gun and Carriage Factories at Woolwich.

CURIOUS that about the same time "FLIGHT" was obtainable by the public last week announcement was made of the Government's intention to bring about compulsory closing of shops, including particularly sweetstuff emporiums, large and small. It is to be hoped this new war-time measure will consequently release the necessary amount of sugar for our hospital war patients, for which we pleaded in *Airships* last week, even if some of the poor jaded folk attending theatres at night have to go through the evening with a little less in the way of sweetmeat nourishment.

TEN YEARS AGO.

Excerpts from the "Auto." ("FLIGHT's" precursor and sister journal) of October, 1906. "FLIGHT" was founded in 1908.

THE AIRSHIP "VILLE DE PARIS."

M. Henry Deutsch's great airship "Ville de Paris" has been inflated, and experiments will shortly be commenced with it to see how it comports itself in the air. In the meantime it may be of interest to recapitulate the principal figures and novel characteristics of this great machine.

To begin with, the gas vessel is itself peculiar, and embodies a suggestion (by the late Col. Renard) of considerable interest for improving the controllability of the machine. The gas vessel, which is 62.50 metres in length, with a maximum diameter of 10.50 metres amidships, is torpedo-shaped, and it is at the rear end that the novel construction suggested by Col. Renard has been introduced. Instead of

coming to a point, the rear cone tails off to a cylinder some 15 metres in length and 5 metres in diameter. Around this cylinder are eight other smaller cylinders with pointed ends; these are arranged in pairs, two deep, in such a way as to form vertical and horizontal fins to the rear part of the main gas vessel. These supplementary cylinders are filled with hydrogen, and their object is to increase the stability of the structure.

The hull, which is built on much the same lines as M. Santos Dumont's machines, and is 32 metres in length, is also suspended in a somewhat similar way from two lateral flaps in the gas-vessel by means of an interlacing triangular system of stays and ties, designed to give an exceptional degree of rigidity to the whole structure. A four-cylinder 70 h.p. Argus-Chenu motor, running at 900 r.p.m., is mounted nearly amidships in the hull, and operates a forward propeller or tractor by means of a propeller-shaft. There is a gear down of 1 to 5 between the motor and the propeller-shaft, so that the latter only revolves at 180 r.p.m., a rather low speed, it must be admitted. The propeller is also constructed on a principle suggested by Col. Renard, the blades being attached to the boss in such a way as to dispense with tie-rods.

M. SANTOS DUMONT WINS THE ARCHDEACON CUP IN FREE FLIGHT.

To his great exploits of the past M. Santos Dumont has added the greatest public triumph that has yet fallen to the lot of any aeronaut. He has accomplished free flight for a distance of 60 metres through the air and at a height of approximately 2 metres above the ground, in a motor-driven aeroplane heavier than air, thus winning the Archdeacon Cup. After a run of about 75 metres the aeroplane soared into the air, rising 2 metres from the ground, for about 60 metres from the time it left the ground to the time the wheels again struck it.

AVIATION IN PARLIAMENT.

Aircraft Raids. A Reassuring Signal.

COMMANDER WEDGWOOD, in the House of Commons on October 24th, asked the Secretary of State for War whether he will consider the possibility when danger from a Zeppelin raid in London has passed of reassuring invalids and parents of young families by sounding a hooter or in some other obvious way?

Mr. Lloyd George: I cannot say more than that this proposal is about to be considered by the Field-Marshal Commanding-in-Chief, Home Forces, in conjunction with the Home Office.

Mr. Billing: Might I ask whether, in view of the enormous amount of inconvenience that is caused by rumours on nights when Zeppelins are expected, information might not be withheld from responsible people asking for it from officials?

Mr. Lloyd George: I do not understand the hon. member's question.

Mr. Billing: Whether information regarding known raids might be withheld from any responsible person who asks a special constable or police official?

Officers' Flying Pay.

MAJOR HUNT asked the Secretary of State for War why it is that if a wounded flying officer succeeds in bringing himself and his aeroplane back into the British lines, and thus saves himself from being taken prisoner and his machine from being captured by the enemy, he is deprived of flying pay after a short time in hospital, whilst a flying officer, whether wounded or not, coming down within the enemy lines or in a neutral country is given flying pay till the end of the war?

Mr. Forster: Flying pay, like other forms of special corps pay, is continued to officers who suffer the crowning misfortune of being imprisoned or interned. In other cases, special consideration is given to cases of injury due to flying, but the orders on this subject were found to have been overlooked in some cases, owing to the rapid growth of the corps. Action to correct this, including review of past errors, was taken in September last.

Mr. Billing: Would the hon. gentleman state whether or not the flying pay of an injured officer who succeeds in getting back wounded with his machine ceases when he comes out of hospital unfit or continues?

Mr. Forster: It continues as long as the officer is on sick leave on full pay. As my hon. friend is probably aware, the length of sick leave on full pay differs in differing circumstances. It rests largely, I think, with the commanding officer to settle how long sick leave on full pay should continue. I think there was some misunderstanding as to how far commanding officers' power was properly exercised. Attention has been called to it, and I hope the matter is in order now.

Mr. Billing: Would the hon. gentleman consider the fairness of allowing cases of officers who are so injured to receive their flying pay so long as they remain in the force for the duration of the war, and thus put them on the same basis as those taken prisoner?

Mr. Forster: I do not think we can make an exception in favour of flying officers.

Airships Over Wales.

MR. CORY asked the First Lord of the Admiralty whether he is aware that a British airship's sudden appearance over parts of South Wales created a good deal of excitement that would have been avoided had any warning been given, even by a brief notice in the newspapers as had been the practice in London; and whether he will direct the officials responsible for these flights by British airships to give warning, whenever possible, of such proposed visits?

Dr. Macnamara: Airships were over South Wales during Monday, October 16th, but returned to their base in daylight. No reports have been received indicating that any alarm was caused.

Zeppelin Raids.

MAJOR NEWMAN, on October 25th, asked the President of the Board of Trade whether he is aware of the danger to which the inhabitants of Enfield and district are exposed in the case of a Zeppelin raid owing to the flashes from the electric tramways and also to the glare of steam reflecting from the fire-boxes of the engines on the Great Northern Railway; and whether he will take steps to remedy this state of affairs?

Mr. Forster: Special instructions are in force in regard to both the points mentioned, but it is not desirable that these should be made public. The hon. member may, however, rest assured that all possible is being done.

Personals.

Casualties.

Captain LESLIE STAFFORD CHARLES, Worcestershire Regiment and R.F.C., reported missing on July 30th and since reported killed on that day, aged 21, was the second son of Mr. and Mrs. R. Stafford Charles, of Broomfield, Stanmore. He was educated at Stanmore Park (the Rev. Vernon Royle), where he took a Mathematical Scholarship for Harrow. At Harrow he became a member of the O.T.C. and the Philatelic Club, and head of his house. He left there in July, 1914, and in the following month received a commission in the Worcestershire Regiment. In May, 1915, he was sent to Gallipoli and was present at the battles of June 4th-9th. He was subsequently invalided home, and was gazetted Captain on November 20th, 1915. Early this year he joined the Royal Flying Corps and took his pilot's certificate last April. He left for active service on July 5th, and lost his life in a combat in the air over the German lines.

Second Lieutenant A. CROPPER, Wiltshire Regiment and R.F.C., who has died of wounds, was the younger son of the Rev. C. H. E. Cropper, Vicar of Holy Trinity, Clifton, and was 19 years of age.

Second Lieutenant A. B. DREWERY, R.F.C., reported killed, was the only son of Mrs. Drewery, 2, Fernley Road, Sparkhill, Birmingham. Educated at St. John's School, Sparkhill, he gained a Foundation Scholarship at Camp Hill Grammar School, and also the Yardley Governors' Exhibition. He was the winner of many certificates and honours at the Municipal Technical School, and after serving an apprenticeship with Kynoch, Ltd., was employed at the works of Willans and Robinson, Rugby, and the Wolseley Motor Co., Birmingham. In 1913 he was elected graduate of the Institution of Automobile Engineers. When war broke out he had been for nearly two years in partnership in a motor agency at Scarborough, but immediately enlisted in the Army Service Corps, Mechanical Transport. He was 10 months in France with heavy lorries, and, being made Sergeant, was nine months with field ambulances. Accepting his discharge in March, 1916, he applied for a commission in the Naval Air Service, but not being successful he went to a flying school at his own expense, and obtained his certificate in six weeks, after which he got his commission in the Royal Flying Corps, and on July 1st went to the Front.

Second Lieutenant ERNEST EDWARD GLORNEY, R.F.C., killed on October 25th, was born in 1887. He was the youngest son of the late George Glorney and Mrs. Glorney, of Dublin, and was educated in Dublin. A mining engineer, he graduated from Columbia University, New York, and the Royal School of Mines, South Kensington, and was a member of the Institute of Mines and Metallurgy. He followed his profession in North and South America, South Africa, and Nigeria. At the outbreak of war he held the position of mining engineer and manager of the Renang Tin Mining Company, Siam, which position he gave up in order to return to England and join the Royal Flying Corps. He received his commission early this year.

Second Lieutenant WILLIAM HENRY IRVINE, R.F.C., killed while flying in England on October 25th, was the only son of Mr. and Mrs. H. O. Irvine, of Southerndown, Bridgend, Glamorgan. He was educated at the Old Hall, Wellington, Shropshire, and at Malvern. After leaving school in December last he matriculated at London University, after which he was employed at a munition factory. He enlisted in the Royal Fusiliers in May, and got his commission in the Royal Flying Corps in July, and received his "wings" on September 28th.

Lieutenant JOHN ANDERSON MANN, Cameronians, attached R.F.C., previously reported missing on August 9th, was shot down on that date with his pilot when on patrol duty. He was 21 years of age, and was educated at Ardvreck, Charterhouse, and Trinity College, Cambridge. He was the best rifle shot of his year in the public schools. On the outbreak

of war he was gazetted to the Scottish Rifles, and joined the Royal Flying Corps last March. Shortly afterwards he and his pilot distinguished themselves by disposing of eight German aeroplanes in seven days. They were each awarded the Military Cross for consistent gallantry and skill. Lieutenant Mann was the eldest son of Mr. John Mann, chartered accountant, of Glasgow and London.

Second Lieutenant FRANCIS GEORGE WAKE MARCHANT, R. West Kent Regiment and R.F.C., killed on October 22nd, aged 19, was the only son of Mr. and Mrs. Frank Marchant, of Woodside, Hayes Common, Kent. He was educated at Eton and Sandhurst, and received his commission in the R. West Kent Regiment on October 19th, 1915, but joined the Royal Flying Corps the same week. He went overseas on March 30th last.

Lieutenant THOMAS WALDEGRAVE NOPS, R.F.C., reported killed in action, was the fourth son of Mr. and Mrs. Edwin Nops, of Brentwood Lodge, Surbiton Hill, and was 24 years of age. Educated at King's College, he entered the service of Messrs. Higginson and Co., City bankers. Joining the Public Schools Corps at the outbreak of the war, he was gazetted to the East Surrey Regiment, and afterwards transferred to the Royal Flying Corps. In a letter the commanding officer states that Lieutenant Nops was in the air in a kite balloon with an observation officer, when the balloon was suddenly attacked by an enemy aeroplane. Instead of hurrying to the ground in his parachute Lieutenant Nops opened fire on the aeroplane with his rifle. In the excitement of the fight he did not appear to notice that the balloon had been set on fire on top, until the flames spread and the balloon began to fall to the ground. He showed the observation officer how to put the final attachment to his parachute, and told his companion to jump. The officer did so, and reached the ground safely. He expected Lieutenant Nops would follow, but it is surmised he had no time to escape by means of his own parachute. He fell with the balloon and was killed instantaneously.

Second Lieutenant AUBREY F. A. PATTERSON, R.F.C., unofficially reported as having died of wounds as a prisoner of war in Germany, was born in 1895. He was the youngest son of Mr. and Mrs. W. R. Patterson, of 40, Cleveland Square, Hyde Park, and was educated at Berkhamstead and Eastbourne College. He distinguished himself as an athlete and took the swimming championship at Eastbourne when he was 16. Within a few days of the outbreak of war he enlisted in the H.A.C. and went out to France at the end of 1914. He was invalided to England in 1915, and received a commission in the West Yorkshire Regiment, being subsequently attached to the R.F.C. He went back to the Front this year and became actively engaged in bombing operations, in which he did "excellent work." He was brought down on September 17th by a German squadron, and died of his wounds at Osnabruck.

Second Lieutenant GEORGE KEITH WELSFORD, R.F.C., reported killed, was the eldest son of Mr. J. H. Welsford and Mrs. Welsford, of Carlton Gardens and Mansfield House, Iver Heath, Bucks, and was 25 years of age. He was educated at Bilton Grange and at Harrow. Lieutenant Welsford was a keen member of the Harrow O.T.C., and was the school champion light-weight boxer and a school swimmer. At the outbreak of war he was sugar-planting in Demerara. He returned home immediately and enlisted in the Royal Engineers as a despatch rider. Lieutenant Welsford went to the Front in June, 1915. He was gazetted Second Lieutenant in the Royal Flying Corps in June, 1916, and was posted as a fully qualified Observer a few weeks ago.

Wounded.

Flight-Lieutenant O. D. FILLEY, R.F.C., officially reported wounded, is an American, who was president of the Harvard University Boat Club and stroke of the Harvard eight which visited England in 1906 to row a match on the tideway against

D. C. R. Stuart's Cambridge crew. Lieutenant Filley came over to offer his services early in the war, and has since been awarded the Military Cross for daring attacks on German aeroplanes.

Missing.

It is reported from Liverpool that Lieutenant CECIL ROBERTS, of the R.F.C., is reported missing after being in action. According to his squadron officer, Lieutenant Roberts, who is a son of a well-known Liverpool merchant, went out with several other machines on the 17th inst., and after much hard fighting had the misfortune to be brought down on the other side of the line. Lieutenant Roberts was well known in swimming circles. He won the Mersey Defences swimming championship in June, and also carried off the Lord Mayor's gold medal in the Officers' race.

Married and to be Married.

The marriage arranged between PHILIP BENTINCK BOYD, Second Lieutenant, Gordon Highlanders, attached R.F.C., elder son of Mr. and Mrs. Gamble Boyd, Toronto, Canada, and DOROTHEA, youngest daughter of Mr. and Mrs. RIDLER DAVIES, Montreal, Canada, took place at St. Paul's, Knightsbridge, last Saturday.

An engagement is announced between Flight-Lieutenant FRANCIS DONALD HOLDEN BREMNER, R.N., elder son of Captain Donald Bremner, late R.A., Assistant Commissioner, City of London Police, and Mrs. Bremner, and VIVYEN GROSER HURD, daughter of Mr. and Mrs. Archibald Hurd, of Hampstead, and Hope Point, St. Margaret's Bay, Kent.

A marriage has been arranged, and will shortly take place, between Flight-Commander J. H. LIDDERDALE, R.N., fourth son of Dr. and Mrs. James Lidderdale, of Clevelands, Prestbury, Cheltenham, and MAUD, youngest daughter of Mr. and Mrs. J. HANSON WALKER, 2, Queen's Elm Square, Chelsea.

The engagement is announced between Captain C. E. H. MEDHURST, R. Inniskilling Fusiliers and R.F.C., youngest son of the late Rev. C. E. Medhurst and Mrs. Medhurst, of Collingham Vicarage, Leeds, and CHRISTOBELL ELIZABETH, youngest daughter of the Rev. and Mrs. T. E. B. GUY, Fulford Vicarage, York.

The marriage arranged between Captain MOSLEY-LEIGH, R.F.C., and Miss OLIVE STIRLING-COOKSON will take place on November 7th, at All Saints', Ennismore Gardens, S.W.



AIRCRAFT WORK AT THE FRONT.

OFFICIAL INFORMATION.

British.

Admiralty, October 26th.

"On the 23rd and 24th inst. attacks in force by naval aeroplanes were carried out on the railway stations at Buk and Drama (both on the railway from Constantinople to Salonica). Considerable damage was done to the rolling-stock. One of our machines failed to return from the attack."

General Headquarters, October 26th, 9.30 p.m.

"In spite of the unfavourable weather, our aeroplanes yesterday co-operated successfully with our artillery, and bombed many enemy billets and depôts. Three of our machines have not returned."

General Headquarters, October 27th, 8.58 p.m.

"Yesterday enemy aeroplanes showed unusual activity; an aerial engagement took place between large numbers of machines on both sides. It is reported that five machines fell during the fight, two of which were our own."

"On another occasion one of our pilots, encountering a formation of 10 hostile machines, attacked them single-handed, and dispersed them far behind their own lines."

General Headquarters, October 29th, 9.55 p.m.

"Yesterday, in spite of a strong adverse wind, much useful reconnaissance work was done by our aeroplanes. One of our machines is missing."

General Headquarters, October 30th, 9.30 p.m.

"Owing to the inclement weather there was little aerial activity yesterday. One enemy machine was seen to fall in flames."

War Office, October 30th.

"*Balkans.*—North of Lake Doiran hostile aeroplanes were brought down."

"*Siruma Front.*—West of Demir Hissar an enemy transport park was bombed by our aeroplanes with excellent results."

French.

Paris, October 24th.

"On the Somme front one of our aeroplanes attacked with a machine gun the enemy's trenches in the St. Pierre Vaast Wood. On the Verdun front yesterday, in spite of a thick mist, our aircraft displayed activity and fought some 20 engagements. Three enemy machines were brought down, one to the north of Azannes, another near Ornes, while the third was seen to fall with a broken wing north of Romagne. Following upon an engagement fought by one of our air squadrons with an enemy group in the region of Verdun, one of our pilots came down to within a hundred metres from the ground in order to set fire to a shed, and to open with his machine gun on a motor car. In Lorraine two German machines were forced to come down damaged. In Alsace one of our pilots brought down an Aviatik, which fell near Cerny. Yesterday our bombarding planes dropped three heavy calibre bombs on the railway station of Spincourt, and about 20 on enemy bivouacs at Azannes."

Paris, October 25th.

"Between 11 in the morning and 1 in the afternoon of October 23rd 11 British bombardment aeroplanes, accompanied by five protecting aeroplanes, bombarded the blast furnaces of Hagondange, on which they threw over a ton of projectiles."

"As the result of this raid several fires were caused. The aviators were able to observe that the bombardment carried out the previous night at the same place by the French aeroplanes had had good results, much damage having apparently been done."

Paris, October 26th.

"A German aeroplane was brought down in the region of Vauquois, in the neighbourhood of our lines, by the fire of our motor guns. One of our pilots attacked from a height of 300 ft. an artillery column on the road between Conflans and Etain, and threw the drivers into disorder. The latter fled, abandoning their teams."

Paris, October 27th.

"Yesterday enemy aeroplanes showed unusual activity. An aerial engagement took place between large numbers of machines on both sides. It is reported that five machines fell during the fight, two of which were our own."

"On another occasion one of our pilots, encountering a formation of 10 hostile machines, attacked them single-handed, and dispersed them far behind their own lines."

"During the night of the 26th-27th our bombarding aeroplanes dropped 40 bombs on the station of Grandre, eight on that of Challerange, 30 on the enemy bivouacs at Fretoy-le-Châteaux and Avricourt (north of Lassigny), where two fires were observed."

"During the same night 10 of our aeroplanes dropped 240 bombs of 120 mm. on the station of Conflans, and 30 of the same calibre on the station of Courcelles. The objectives were hit by numerous projectiles. Another of our machines dropped six bombs on the railway at Pagny-sur-Moselle."

Paris, October 30th.

"*Salonica.*—A German aeroplane was brought down in our lines."

Italian.

Rome, October 24th.

"Taking advantage of the fine weather aircraft were active. An enemy aeroplane was shot down by our aviators, and fell in flames near Biglia, south-east of Gorizia. Austrian hydroplanes dropped bombs over the Caorle Lagoon, at the mouth of the Tagliamento, without doing any damage. A French aviator belonging to one of our squadrons succeeded in destroying one of the enemy machines."

Roumanian.

Bucharest, October 27th.

"At Hucgis an enemy aeroplane was brought down by our artillery."

German.

Berlin, October 21st.

"Our battle air squadrons supported our observation airmen in numerous air attacks. Twelve enemy aeroplanes were shot down, four of them descending behind our lines. A night air raid on railway stations and ammunition depôts behind the enemy's front had good success. Conflagrations and explosions were observed."

"Balkans.—German aerial squadrons successfully participated in the fighting (in the Dobrudja) from the air."

Berlin, October 23rd.

"Twenty-two enemy aviators were shot down by aerial attacks and anti-aircraft fire. Eleven aeroplanes are lying behind our lines. Capt. Boelcke conquered his thirty-seventh and thirty-eighth foes, and Lieut. Frankl his fourteenth enemy."

"Enemy aviators dropped bombs on Metz and villages in Lorraine. No military damage has been caused, but five civilians died and seven were taken ill through inhaling the poisonous gases emitted by the bombs."

"Yesterday enemy seaplanes attacked our East Frisian Islands. The attack was without result, and no damage was caused."

"Balkans.—A naval aeroplane landed far behind the retreating enemy, destroyed two aeroplanes on the ground and safely returned."

Berlin, October 26th.

"Balkans.—During the night of October 25th our airships dropped bombs on the railway near Fetesti (west of Czernavoda), with satisfactory results."

Bulgarian.

Sofia, October 18th.

"Enemy aeroplanes unsuccessfully dropped bombs on Pilep."

Sofia, October 24th.

"A German seaplane descended behind the enemy's front on the aerodrome near the village of Karaksum, and destroyed two enemy aeroplanes, after having killed the soldiers on guard. The seaplane returned safely."

BRITISH AIR WORK.

THE following incidents, extracted from recent reports of the Royal Flying Corps in France, were issued by the Air Board on October 27th:—

"September 15th.—Artillery co-operation. On one Army front 70 hostile batteries were engaged and 159 active batteries were located, 29 of which were silenced; 13 direct hits were observed."

"In a successful bombing raid carried out on Bapaume Station 38 bombs were dropped from heights varying from 200 to 800 ft. One train, several trucks and the station buildings were repeatedly hit, and the railway line was badly damaged. At Velu Station three trains were hit, several coaches derailed and a large store by the side of the line set on fire. Six bombs were also dropped on a neighbouring aerodrome. During the raid on Bapaume Station the escort protecting the bombers accounted for four German machines, which were seen to fall to earth."

"On the same day another bombing party attacked trains in the vicinity of Cambrai; one bomb, dropping from a height of 500 ft., exploded and blew up an ammunition train, a previous bomb having hit the engine. Another bomb was dropped in the midst of a mass of troops, who got out of the train. A truck of another train was also hit. In the course of this raid some of our pilots attacked transport which was alongside the train with machine-gun fire. Damage was also done to trains at several other stations, and troops and transport on the road leading to Le Transloy were attacked with success."

"Two of our pilots, while on an offensive patrol, encountered 17 hostile aeroplanes at varying heights. They dived into the middle of the hostile formation and attacked. One pilot got to very close quarters with a hostile machine, which burst into flames and was seen to plunge to earth. He then attacked a second machine, which was driven down and fell in a field. A third machine went down vertically, and was seen to crash."

"Second Lieut. 'A,' whilst on patrol, observing infantry on a road, dived down to 200 ft., attacked with his machine gun, firing about 100 rounds and causing great panic and many casualties. He was subjected to very heavy rifle fire. On many other occasions German infantry were engaged with machine gun fire from aeroplanes, and one battery was temporarily silenced."

"September 21st.—Lieut. 'B,' having dispersed a formation of six Rolands, got underneath the nearest machine and emptied a drum of ammunition into it. The enemy went down and landed apparently under control. Lieut. 'B' then attacked a second machine from underneath and fired two drums into the pilot's seat. The hostile machine was seen to plunge to earth. Later in the evening Lieut. 'B' destroyed another machine."

"Second Lieut. 'C' attacked and brought down a hostile kite balloon. At 3,000 ft., when over Comines, he dived on the balloon which was then rapidly descending. He opened fire at 400 yards and finished his drum as he passed about 20 ft. over the balloon, which had by that time caught fire."

"September 22nd.—A bombing raid was carried out on Somain Station. An ammunition train was blown up, and the rolling-stock, permanent way, station and sheds were considerably damaged."

"September 23rd.—Artillery co-operation. Artillery, in co-operation with aircraft, obtained four direct hits on gun-pits and two on an anti-aircraft battery, both of which caused explosions. Two hits were obtained by siege artillery on a hostile battery. Trenches were damaged and some lorries west of Vimy were hit. Second Lieut. 'D' and Corpl. 'E' attacked a hostile machine near Sailly Saillisel. The German was driven down, and appeared to be out of control. Later, when near Morval, they attacked two hostile machines, one of which succeeded in getting in position in rear of our machine. Lieut. 'D' stalled the machines, and the observer stood up to use the rear gun, but he had barely pulled the gun into position when he was hit in the head and killed. The gun fell down, as the stand had not been clipped into position, and struck the pilot on the head. The pilot remembers nothing distinctly until he recovered consciousness on the way to a French Army Headquarters."

"Captain 'F' engaged two hostile machines over Warlen-court. He emptied a drum into one of them at a range of 5 yards. The German machine fell to earth."

"In a bombing raid 132 bombs were dropped on Fresnoy, Lens and Lille Stations, and considerable damage was done. Douai Railway Station was also attacked. A fire and explosion were caused at Roisel Station. Bapaume Station was also attacked and considerably damaged."

"Three further bombing raids were carried out by night."

"At about 6 p.m. Lieut. 'G' engaged four two-seater Rolands. Approaching from behind he scattered his opponents by firing one drum at them. He then got underneath the nearest machine, into which he fired 90 rounds. The machine caught fire, and was seen to plunge to earth."

"Lieut. 'H' while on an offensive patrol attacked a Fokker. The German machine was destroyed."

"Fifty-two bombs were dropped on Seclin Railway Station, setting fire to the main station building and hitting the railway bridge."

"September 25th.—The following scheme, which was planned to intercept traffic on the Douai-Lille main line, was carried out on September 25th. The railway station at Libercourt, sidings and rolling-stock were to be bombed and an attempt made to attack trains going south in the hope that they might be carrying troops or ammunition towards the Somme battlefield. Patrols, each of three aeroplanes, were first sent to attack neighbouring enemy aerodromes to prevent German aeroplanes from going up to interfere; smoke bombs were dropped at intervals to keep the aerodromes enveloped in smoke, and from time to time a high-explosive bomb to show that our machines were still there. During this period two of our machines were to descend and attack the trains. The first train to appear was seen leaving Libercourt at about 1.40 p.m., and our machines dived down to attack it. While descending a second train was seen coming up on a branch line towards Ostricourt, where it joins the main line, and one of our machines diverted on to it. The first train was attacked from a height of about 800 ft. near Ostricourt; six bombs were dropped. The engine was hit, became derailed and two or three of the front coaches partly telescoped. German soldiers immediately began to alight, were fired on and ran towards Ostricourt village and woods. There were so many men that the pilots said it

would have been hard to miss them, and a large number were either killed or wounded. Meanwhile the second train came to a standstill near the junction as the wrecked train on the main line was blocking its way. The other machine attacked it with six bombs, two of which hit the train and one the engine. Troops also here began to descend and were fired on. They fled towards the neighbouring village. Altogether between 600 and 700 rounds were fired by the two aeroplanes, and many German soldiers were hit. Neither of our machines were fired on. As soon as the attack on the trains began the main raiding party, composed of seven aeroplanes, and an escort attacked Liber Court Station at about 2 p.m., where 14 heavy and 34 smaller bombs were dropped. Station buildings, sidings and rolling-stock were hit, some carriages were wrecked, and one coach was afterwards observed to be lying crossways over the line.

Any Machinery Standing Idle?

MANUFACTURERS possessing idle resources and desiring to be placed in touch with Government Contracting Departments are invited to communicate with the Central Clearing House, Ministry of Munitions, 8-9, Northumberland Street, W., with the object of utilising any machinery which they have unemployed. To this end the Minister of Munitions has established a central clearing house organisation in the Ministry for the purpose of tracing and registering all such machinery which is idle or about to become idle. The organisation will endeavour:—(a) To ensure that contracts placed by the Ministry are directed towards any unoccupied manufacturing capacity which might exist in the country; (b) To place engineering contractors who have suitable facilities for particular supplies in touch with the Ministry and with other Government departments requiring these supplies, and to help contractors who are able to undertake additional or more suitable work now or at a future date to maintain continuous employment of their machinery and labour.

A Colonial ex-Premier on Air Power.

At the meeting of the Pilgrims addressed by Mr. W. F. Massey, the Prime Minister of New Zealand, on October 26th, Sir Joseph Ward urged that from the war the lesson should be learned that in the years to come an air fleet of a magnitude equal to that of the British Navy on the seas would be necessary if we were to hold our own and maintain the solidarity of the British Empire. As in the past a naval programme of two keels to every keel laid by our rivals had been necessary, so must the programme of construction of the British air fleet surpass the programme of other Powers. It must be recognised that war in the air would be a factor of vast importance.

The Death of Captain Boelcke.

ALTHOUGH there is some doubt at present as to how he came by his end, it is now admitted from Berlin that Capt. Boelcke was killed on October 28th during an air fight. The Berlin telegram says that his machine collided with another, and he was killed in landing in the German lines, but a Cologne message states that he was shot down by a British pilot east of Cambrai. It is claimed that on the previous day he had shot down his fortieth enemy machine.

It will be recalled that it was reported that he had been shot down and killed by the French pilot Adjutant Ribiere on June 18th, the day that Lieut. Immelmann, was felled by Lieut. McCubbin, R.F.C., but the report was quickly contradicted from Berlin. Until the death of Immelmann his name and Boelcke were almost always linked together as the outstanding exponents of the Fokker monoplane. Boelcke was 25 years of age, and took up flying in the spring of 1914.

Another Prominent German Flyer Killed.

ACCORDING to the correspondent of the *Lokalanzeiger* on the Western front, German military aviation has sustained another heavy loss in the death of Capt. Schmidt, one of their best pilots. He is said to have been shot while over the Allied lines, and though he got back to the German lines he succumbed to his wounds soon afterwards.

The Mystery of Commander Mathy.

DESPITE the persistence with which German Press agents tried to make out that the Commander of the airship

"The patrol over Brovin Aerodrome destroyed a hangar in the course of its work, and that over a neighbouring village caused a fire, which spread all over the northern part of it.

"This is believed to have been caused by a petrol store being hit, as the fire was still burning at 7 p.m. that evening. One hostile aeroplane came on the scene during the proceedings, but this was easily driven off.

"September 26th.—A contact patrol machine flew over Gird trench at between 300 and 400 ft. during the morning. The Germans in the trench held up their hands and waved white handkerchiefs. This information was transmitted to the ground station, and the Germans shortly afterwards surrendered to our troops.

"Hostile kite balloons were attacked at 11 a.m.; two were brought down in flames."

"L. 31" brought down at Potters' Bar was Capt. Schreib Muller, it is apparently now admitted that Capt.-Lieut. Heinrich Mathy was the officer. At any rate, *Die Woche* prints his portrait and describes him as the "commander of the airship destroyed on the aerial attack on London October 1st-2nd."

The paper also publishes a photograph of "Ober-Lieutenant zu S. Werner Peterson, who met a hero's death in the aerial attack on London, September 23rd-24th." Presumably he was on the airship brought down in flames in Essex.

Zeppelins Working with Submarines.

IN connection with the ruthless submarine campaign against Scandinavian shipping, the Germans are using a great number of Zeppelins for patrolling the Norwegian coasts, says the Bergen correspondent of the *Politiken*. The crew of one of the torpedoed Norwegian ships report that a Zeppelin, having sighted the ship, signalled with a large flag, whereupon a German submarine came up and sank the steamer. A number of other steamers are being pursued by the airships.

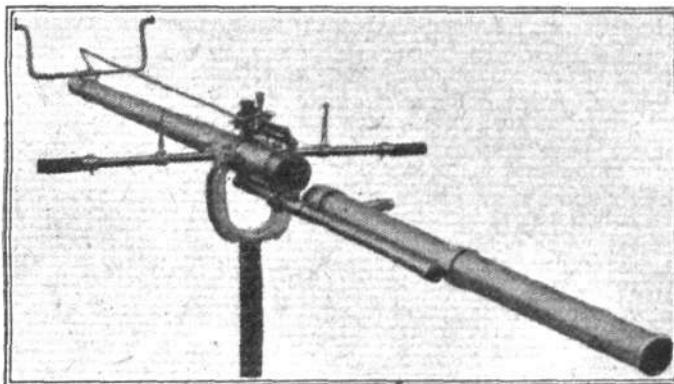
Holland and Zeppelins.

BOTH the *Telegraaf* and the *Nieuws van den Dag* are urging the Dutch Government to take stronger measures against the repetition of Zeppelin incidents over Holland. The *Telegraaf* characterises the recent trip, when a bomb was dropped, as a hostile act against which protests are useless, while the *Nieuws van den Dag* describes it as an intentional violation of Dutch territory.

The former paper demands a larger number of anti-aircraft installations, and calls for airmen to be stationed near spots which have special importance for the Germans, in order that when a Zeppelin appears over Holland strong military measures may teach the Germans to refrain from such undesirable visits.

Count Zeppelin at it Again.

HAVING recovered from his recent illness, Count Zeppelin has been paying a visit to his works at Friedrichshafen. By way of encouraging the workmen, he told them that the airships they had constructed had recently spread destruction and terror in the world's largest fortified capital.



The Davis non-recoil gun, which has been developed in America for use on aeroplanes. It is seen with the breach open for loading.

SIDE-WINDS.

THAT he might have been able to spare a couple more hours to inspect the extensive works of the Blackburn Aeroplane and Motor Co., Ltd., was the only regret of Field-Marshal Lord French at the conclusion of his visit last week. Under the guidance of Mr. Blackburn, the Managing Director, and Mr. Stuart Hirst, Chairman of the Company, Lord French went through the whole of the shops, and saw the complete process of building an aeroplane from drawing board to the final inspection. He expressed his appreciation of the completeness of the company's organisation, and was greatly interested in the numberless labour-saving devices and arrangements which have done so much to expedite the building of aircraft. One department which proved specially attractive was that given over to propeller building, where air screws were seen in the various stages of manufacture, while a fascinating display of finished propellers had been arranged in an annex. The visitors—for the Field-Marshal was accompanied by Brig.-Gen. H. C. Lowther, Lieut.-Col. A. Fitzgerald Watt, Col. Gordon, the Lord Mayor of Leeds, the Chief Constable and many others—were also interested in the work of the company as regards the welfare of their employees, and the canteen buildings were not forgotten in the tour. As a souvenir of his visit, Lord French was presented by Mr. Hirst with an album, bound in red morocco and suitably inscribed, containing photographs of the interior and exterior of many of the office and works buildings.

MESSRS. J. W. CARR and Co., LTD., the machinery, tool and metal dealers of 35, Queen Victoria Street, E.C., advise us that Mr. J. Wilson, of their Machine Tool Dept., is no longer in their employ.

MR. ALEXANDER JOHNSTON, the General Manager of the North British Rubber Co., Ltd., Castle Mills, Edinburgh, has just been made a Justice of the Peace for the County of the City of Edinburgh. Congratulations!

PRACTICAL and scientific opinions differ as to the most economical methods of utilising labour, whether it shall be seven, six days, or otherwise continuous work. On balance it is beginning to be conceded that all work and no rest tends very materially to defeat its own end so far as output is concerned. The tendency is therefore to give relaxation with discretion and gather in as a result the greater advantage from labour untired. Nevertheless, no aid should be left untried which may help to the greatest efficiency, and from personal experience we can vouch for the very remarkable recuperative effects of Horlick's Malted Milk, which is a combination of pure, rich, full-cream milk to which is added the nutritive extracts of malted barley and wheat, and, being in powder form, it keeps indefinitely anywhere, and is instantly ready for use by stirring briskly in hot or cold water. This preparation is produced under ideal conditions, and its absolute purity can always be depended on, as it is manufactured by the latest scientific methods in a district of England noted for its milk and cereal supplies. Whereas many persons find a difficulty in properly assimilating and digesting ordinary milk, which is largely used to counteract the ill-effects from which many workers in munition works suffer at the present time, Horlick's Malted Milk contains far more nutriment than ordinary milk, and can be taken without difficulty by even those of the weakest digestion, and is therefore extremely valuable to all who are feeling the stress and strain of extra work, especially those who are doing this under unfavourable conditions. Horlick's Malted Milk is also obtainable in the form of delicious tablets to be dissolved in the mouth as required, very useful when it is not convenient to prepare a drink, and in this form it has been supplied extensively to H.M. Forces both direct and through the War Office and Admiralty.

Those interested in keeping munition workers, both male and female, in the best possible condition will do well to communicate with Horlick's Malted Milk Co., Slough, Bucks, by whom fullest particulars will be supplied.

CHAS. BOSS and Co. (LIVERPOOL), LTD., have now landing about 50 stds. prime silver spruce ex "Manchester Exchange" and "Manchester Merchant." They will be glad to answer any inquiries at 634, Royal Liver Building, Liverpool.

AFTER a drive in cars provided by the Motor Squadron of the London Volunteer Rifles, Mr. Albert E. Cole and others, a large party of wounded soldiers were entertained to tea and a musical programme at the Bishopsgate Institute on October 21st. The event was under the auspices of the Coachbuilding and Motor Trade Fund for Entertaining Wounded Soldiers, and was as successful as the outing to East Molesey in September.

FROM THE BRITISH FLYING GROUNDS.

Grahame-White School, Hendon.

CIRCUITS and landing practice with instructor last week: Messrs. Cockell, Edwards, Green, Hitchcock, Keizer, Meering, Munro, Norris, Ranson, Robertson, Sutherland, Travers, Whiteman, Woods and Zambournis. Straights alone: Mr. Culver. Circuits alone: Lieut. Rogers and Mr. Steeves.

Brevet taken by Mr. Saunders.

Instructors: Messrs. Manton, Winter, Pashley, Hale and Biard.

Hall School, Hendon.

PUPILS under instruction last week:—With Cecil M. Hill: Messrs. Dutton, Lieut. Malden, Shepherd, Hewett, Packman and Hill. With Fred J. Glegg: Messrs. Blake, Maude, Yuill, Heathcote and Foster. With Stanley G. Cowrie: Messrs. Mayer, Heathcote, Course, Maude, Foster, Gamble and Blake. With Ernest Charles Orton: Messrs. Rodgers, Gamble, Hewett, Todd and Jackes.

Royal Aero Club certificate taken by Mr. Dutton on 70 h.p. Hall tractor biplane.

PUBLICATIONS RECEIVED.

An Outline of Theosophy. By C. W. Leadbeater. London: The Theosophical Publishing Society.

Theory of Structures. By Arthur Morley, M.Sc., M.I.Mech.E. London: Longmans, Green and Co. Price 7s. 6d. net.

NEW COMPANIES REGISTERED.

DRAKE AERONAUTICAL ENGINEERING SYNDICATE, LTD.—Capital £3,000, in £1 shares. Manufacturers of and dealers in toys, aeroplanes, airships and other kinds of aircraft. First directors: C. R. S. Cadell, A. Coote, R. R. Drake and J. Ward.

NORTH LONDON CARRYING CO., LTD., Small Yard, Fernhead Road, Kilburn, N.W.—Capital £2,000, in £1 shares. Acquiring business carried on by H. L. Wilton of manufacturers of and dealers in aircraft and component parts thereof, builders of hangars, garages, sheds and aerodromes. Horace L. Wilton permanent managing-director.

Aeronautical Patents Published.

Applied for in 1915.

Published November 2nd, 1916.

- 14,678. L. SAMPLE. Height indicator for aircraft.
- 17,433. W. BRIERLEY and VARIOPLANE CO. Landing-gear for aeroplanes.
- 17,530. H. O. SHORT. Stay wires of flying machines.

If you require anything pertaining to aviation, study "FLIGHT'S" Buyers' Guide and Trade Directory, which appears in our advertisement pages each week.

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